INDUSTRIAL MEDICINE *and* SURGERY

Established 1932

DECEMBER 1959

Volume 28 Number 12

HEAVY METAL POISONING

is still a Formidable Threat

...but now Calcium Disodium VERSENATE provides a dependably effective means of removing lead and other heavy metals from the body...and *without danger of organ damage.* Calcium Disodium VERSENATE is available in both oral and intravenous preparations; the intravenous form for safe, effective, dramatic short-term treatment; the oral form for convenient prevention of exacerbations or as sole therapy for milder types of lead poisoning.

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RESULTS IN 366 PATIENTS WITH STOMACH ULCERS

DIAGNOSIS	TOTAL	MARKED IMPROVEMENT WITH X-RAY GAINS	MARKED IMPROVEMENT	SLIGHT IMPROVEMENT	NO IMPROVEMENT
PEPTIC	50	10	29	9	2
GASTRIC	56	11	33	10	2
DUODENAL	256	39	175	33	9
PYLORIC	4	—	1	2	1
TOTAL	366	60	238	54	14
Summary of investigators' reports.		16%	65%	15%	4%

81% MARKED IMPROVEMENT REPORTED

proven relief of pain, spasm and nervous tension without the side effects of belladonna, bromides or barbiturates

INDICATIONS—

duodenal and gastric ulcer
gastritis
colitis
spastic and irritable colon
gastric hypermotility
esophageal spasm
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functional diarrhea
G. I. symptoms of anxiety states

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for adjustability of dosage

Milpath - 400—Yellow, scored tablets of 400 mg. meprobamate and 25 mg. tridihexethyl chloride (formerly supplied as the iodide). Bottle of 50.

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WALLACE LABORATORIES *New Brunswick, N. J.*

813

report of a study in which a long acting antihistamine-decongestant combination (RYNATAN®) was used in the treatment of a variety of respiratory infections in industrial workers*

"Our efforts in an industrial practice have been aimed not only at keeping the man on the job but, by effective relief of symptoms, increasing his productive effort and sense of well-being while at work."*

"This study relates to a long acting antihistamine-decongestant combination in the treatment of a variety of respiratory infections by providing relief of symptoms for 90% of 175 cases with a low frequency of side effects." Furthermore, ". . . we felt the objective improvement was such that this antihistamine-decongestant shortened the duration of illness from respiratory infection and provided relief of symptoms due to rhinorrhea, sneezing, postnasal drip, headache and generalized congestion."*

RESPONSE TO MEDICATION (Rynatan)

response	no. of patients		
Excellent	50	28.6%	89.7% benefited
Good	78	44.6%	
Fair	29	16.5%	
Poor	18	10.3%	

*Steller, R. E.; DeMar, E. A., and Schwartz, F. R.: Symptomatic Treatment for Upper Respiratory Infections, Industrial Medicine and Surgery 28:362 (August) 1959.

Rynatan is the trade name of Irwin, Neisler & Co., Decatur, Illinois, for the antihistamine combination of phenylephrine tannate, prophenpyridamine tannate and pyrilamine tannate.

INDUSTRIAL MEDICINE and SURGERY

ESTABLISHED 1932

The International Journal of Medicine in Industry

DECEMBER, 1959
VOLUME XXVIII
NUMBER 12

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BPA

PERSONAL NEWS AND NOTES

GEORGE L. WOLCOTT, M.D., has joined Wallace Laboratories as Scientific Director. He was formerly Medical Director and Assistant Vice President of Bristol-Myers Products Division and Director of Industrial Health for Bristol-Myers and subsidiary companies.

DR. WOLCOTT received his medical degree at Columbia University, College of Physicians and Surgeons in 1938, and is licensed to practice both in New York and New Jersey. Prior to joining Bristol-Myers, DR. WOLCOTT was Assistant Medical Director of Bristol Laboratories. He is a member of American Medical Association and Industrial Medical Association.

HARRY E. UNGERLEIDER, M.D., has been appointed Medical Director for Standard Security Life Insurance Company of New York. DR. UNGERLEIDER was formerly Director of Medical Research for The Equitable Life Assurance Society and is a past President of the Association of Life Insurance Medical Directors. He also serves now as Consulting Medical Director of the North American Reassurance Company, largest life reinsurance organization in the United States.

Responsible for all medical underwriting activities of Standard Security, DR. UNGERLEIDER will also be in charge of evolving new methods for and approaches to the selection of risks.

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on the job
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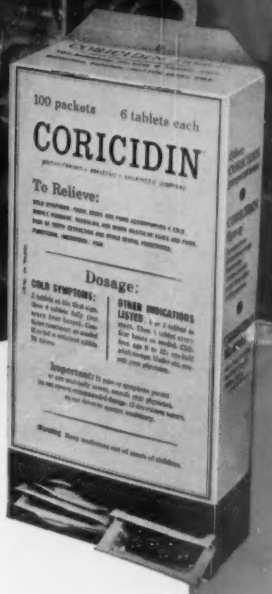

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He received his M.D. from Medico-Chirurgical College of Philadelphia in 1916. He is a member of American College of Physicians, Association of Life Insurance Medical Directors of America, and Industrial Medical Association .

At the annual meeting of the American Public Health Association, the following officers were elected to the Occupational Health Section: Chairman, SEWARD E. MILLER, M.D., Ann Arbor, Michigan; Vice-Chairman, WILLIAM G. FREDRICK, Sc.D., Detroit, Michigan; Secretary, MITCHELL R. ZAVON, M.D., Cincinnati, Ohio; Secretary-Elect, MELVIN M. UDELL, M.D., New York, N. Y. Members of Section Council, one-year term, CHARLES C. DILLS, Lt. Col., Wright-Patterson AFB, Ohio, and ROBERT H. FLINN, M.D., Cincinnati, Ohio; two-year term, CLYDE M. BERRY, Ph.D., Iowa City, Iowa, and BERNARD E. CONLEY, Ph.D., Chicago, Ill.; three-year term, ELSTON L. BELKNAP, M.D., Milwaukee, Wis., and LEWIS J. CRALLEY, Ph.D., Cincinnati, Ohio. Member of Association Nominating Committee for Elective Councilors, HERBERT T. WALWORTH, M.S., Chicago, Ill. Member of Association Standing Committee on Eligibility, two-year term, HERMAN J. BENNETT, M.D., Poughkeepsie, N. Y.

WILLIAM A. SAWYER, M.D., retired Medical Director for Eastman Kodak Company and CAREY P. McCORD, M.D., Editor of this journal, were on the list of the 40 year retirees of the American Public Health Association. At the recent Atlantic City sessions a dinner by the governing council honored this group of physicians and others whose membership and fellowship was 40 years or more.

Society of Nuclear Medicine is pleased to announce the forthcoming publication of its official organ, *The Journal of Nuclear Medicine*. The first quarterly issue will appear during January, 1960.

GEORGE E. THOMA, M.D., St. Louis, has been appointed Editor. The editorial content of the *Journal* will be directed towards those members of the medical and allied professions who are interested in the diagnostic and therapeutic application of radioisotopes and in human radiobiology.

Manuscripts and books for review should be directed to the Editor, GEORGE E. THOMA, M.D., Southwest Medical Center, 3915 Watson Road, St. Louis 9, Missouri. The annual Subscription rate is $10.00 and such requests should be mailed to the publisher, Samuel N. Turiel & Associates, Inc., 430 N. Michigan Ave., Chicago 11, Illinois.

DAVID D. DRYE, M.D., has accepted a post as physician at a Detroit General Motors Company plant. He also plans to do research there.

After completing his secondary education at Millersburg Military Institute, he enrolled at the University of Kentucky as a premedical student but his studies there were interrupted by World War II service in both the Army and the Navy.

He returned to the University in 1946 and later transferred to Transylvania College, where he was graduated in 1949. He then enrolled at the University of Louisville School of Medicine, received his degree there in 1953, served a year's internship at General Hospital in Montreal, Canada, and spent several months as resident physician at University Hospital, Cleveland, before establishing a practice at Bradfordsville, Kentucky, in November, 1954.

Central States Society of Industrial Medicine and Surgery presents a one day winter meeting on December 5, 1959, at the Sheraton-Jefferson Hotel, St. Louis, Missouri. A letter of invitation from Robert Bassett, M.D., President, St. Louis Medical Society, was sent to 35 organizations including business and health groups in St. Louis and surrounding areas. The public as well as representatives from professional societies are invited to attend the one day conference on ideas of employment and reemployment of heart, cancer, diabetes and tuberculosis patients.

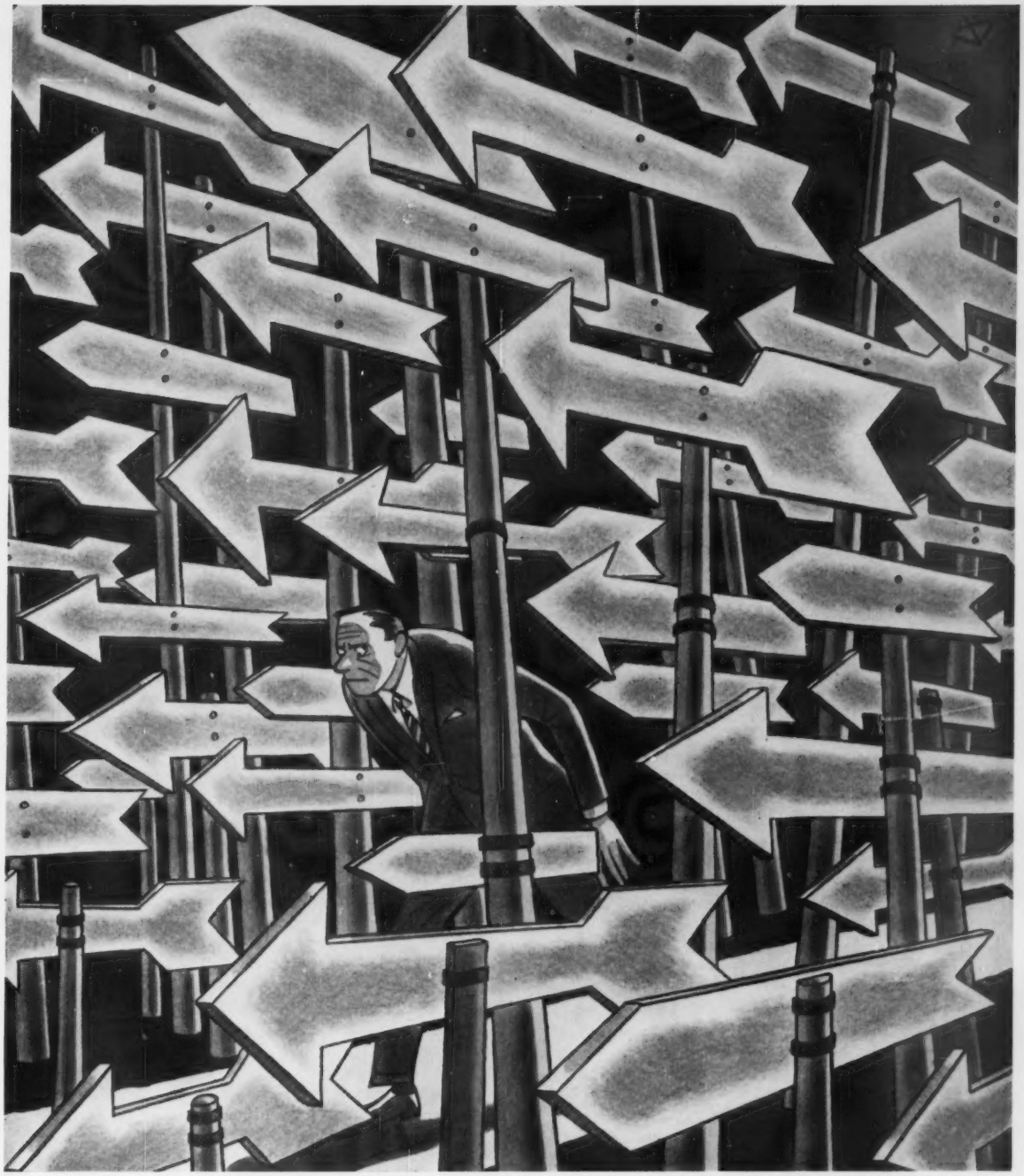
There will be panel sessions morning and afternoon. At the luncheon meeting, the keynote speaker will be PAUL DUDLEY WHITE, M.D. An attendance of 600 to 800 is expected. The public is invited to the scientific sessions as well as the luncheon.

The morning program is entitled, "Employment Problems in Heart Disease, Diabetes, Gerontology, Mental Health and Tuberculosis." Diabetes Panel — GEORGE COOPER, M.D., Chicago, Illinois; JOSEPH BEARWOOD, JR., M.D. (Speaker) Chairman, Employment, American Diabetes Association. Gerontology — WILLIAM B. KOUNTZ, M.D., Director of Scientific Research, Gerontological Research Foundation. Mental Health — ADDISON DUVAL, M.D., Director, Division of Mental Diseases, Missouri Department of Health. Tuberculosis — MR. RALPH SUSMAN, Director, Rehabilitation, National Tuberculosis Association. Luncheon meeting — RICHARD SUTTER, M.D., President, Central States Society of Industrial Medicine and Surgery and Director, Sutter Industrial Clinic, St. Louis, will introduce D. JOHN LAUER, M.D., President, Industrial Medical Association and Medical Director, Jones and Laughlin Steel Co., Pittsburgh, also MR. F. WENDELL HUNTINGTON, Vice-president, Ralston-Purina Co., St. Louis. BILLE B. HENNAN will introduce PAUL DUDLEY WHITE, M.D., President, International Society of Cardiology Foundation. Emeritus Professor, Harvard Medical School, and Consultant, Massachusetts General Hospital. DR. WHITE's topic will be "The Relation of Heart Disease to Industry."

Afternoon panels will be on each subject as in the morning. The morning's speaker will attend, with a representative from industry, safety, industrial nursing, industrial hygiene and industrial medical practice on each panel, with Chairmen as follows: Diabetes — EUSTACE E. KING, M.D., Procter and Gamble Co. in St. Louis. Gerontology — ALVIN H. DEAHR, M.D. Tuberculosis — ROBERT BASSETT, M.D. Mental Health — WILLIAM MACON, JR., M.D., W. L. Macon Medical Center of St. Louis. Heart — R. EMMETT KELLEY, M.D., Medical Director, Monsanto Chemical Co. and PAUL DUDLEY WHITE, M.D.

A summation of the conference will be given by RICHARD A. SUTTER, M.D.

Institute of Industrial Health of the University of Cincinnati announces a course of instruction



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in Industrial Eye Problems to be given during the week of January 18-22, 1960. It will be presented by the Institute of Industrial Health in cooperation with the Department of Ophthalmology.

The objective of the course is to enable the industrial physician to recognize significant eye pathology, understand the limitations and abilities of persons with defective vision and perform basic eye examination procedures. Emphasis throughout will be on the needs of the industrial physician.

Current concepts regarding vision requirements for specific job categories will be discussed. Eye examination procedures and vision screening devices will be demonstrated. Opportunity for informal discussion of practical problems will be provided.

Physicians interested in attending the course should write for an application blank to: A/60, Institute of Industrial Health, Kettering Laboratory, Eden and Bethesda Avenues, Cincinnati 19, Ohio.

ANTHONY D. VAMVAS, M.D., has been appointed Medical Director of The Babcock & Wilcox Company's Barberton, Ohio, operations, it has been announced by E. V. Johns, manager of staff services for the boiler division.

DR. VAMVAS will succeed JOSEPH B. REILLY, M.D., who has resigned to devote full time to his private medical practice.

Died

JOHN L. CARPENTER, M.D., Alexandria, Indiana, physician for the past 30 years, at Ball Memorial Hospital, Muncie.

DR. CARPENTER came to Alexandria in 1929, shortly after his graduation from the Indiana University Medical School in Indianapolis. He had interned at Methodist Hospital in Indianapolis. Since 1947 he had been associated with Dr. George Overpeck at the Alexandria Clinic.

DR. CARPENTER was a member of the Madison County Medical Association, the Indiana State Medical Association, and the American Medical Association. He also held membership in Phi Chi, honorary medical fraternity and the Phi Psi fraternity at Valparaiso University.

For many years he has served as Medical Director of both the Johns-Manville Corporation and the National Gypsum Company. He served in the same capacity for Aladdin Industries, and during World War II was Medical Director of Guide Lamp in Anderson, Indiana.

ORAN HUBBELL TALLEY, M.D., 74, physician since 1939 for American Smelting and Refining Co., at Corpus Christi, Texas, following a long illness.

He practiced medicine in Mexico for 20 years as physician for the refining company before being transferred to Corpus Christi in 1942 when the plant here opened. He moved to Texas in 1939.

A graduate of the University of Texas Medical School, he was a veteran of World War I and a surgeon in the Medical Corps.

DR. TALLEY was born Dec. 12, 1884, in Gonzales. He was a member of St. Theresa's Catholic Church, Knights of Columbus and Alhambra Baza Caravan.

He had done outstanding X-ray work on silicosis, a disease once prevalent among mining personnel.

DEWEESE E. BROWN, M.D., physician of the American Steel and Wire Division, Donora plant, died October 19 in Bristol, Vermont.

DR. BROWN will be long remembered in the community as a great humanitarian, and in medical circles as an outstanding diagnostician. He was born in McKeesport, June 3, 1898, and was 61 at his death. He attended grade school in Clairton and graduated from Donora High School in 1917. Following graduation, he took one year of college preparatory study at Western Reserve University in Cleveland.

In 1922, he started work in the electrical department of the Donora Steel Works as an electrician and sub station engineer. He maintained his interest in electronics throughout his medical career.

In 1923, while still employed at Donora Steel Works, he enrolled as a medical student at the University of Pittsburgh, where he received his medical doctorate in 1931. He served his internship at Western Pennsylvania Hospital, Pittsburgh.

In 1933, DR. BROWN began services as Works Physician at Donora Steel and Wire Works, where he continued in that capacity until June 30, 1958. His skill as an industrial surgeon was recognized publicly at a banquet held in his honor by the American Steel and Wire Division Donora plant on July 2, 1958, at Monongahela Valley Country Club.

He served as Staff Surgeon at Charleroi — Monessen Hospital, was recognized at West Penn and other Pittsburgh hospitals as a fine diagnostician, and was a member of the American Medical Association, the Pennsylvania Medical Association and the Industrial Medical Association.

LARS W. SWITZER, M.D., died of a heart attack October 14, in Essexville, Michigan. He was company physician for General Motors at Bay City. He was the first director of the Manistee-Mason-Benzie Health Department when it was formed in 1936. He served as director of the Health Department from 1936 to 1940, and from 1942 to 1951.

EDWARD JACKEMY, M.D., 53, a physician at the Milpitas plant of the Ford Motor Co., San Jose, Calif., was found dead at his home October 13.

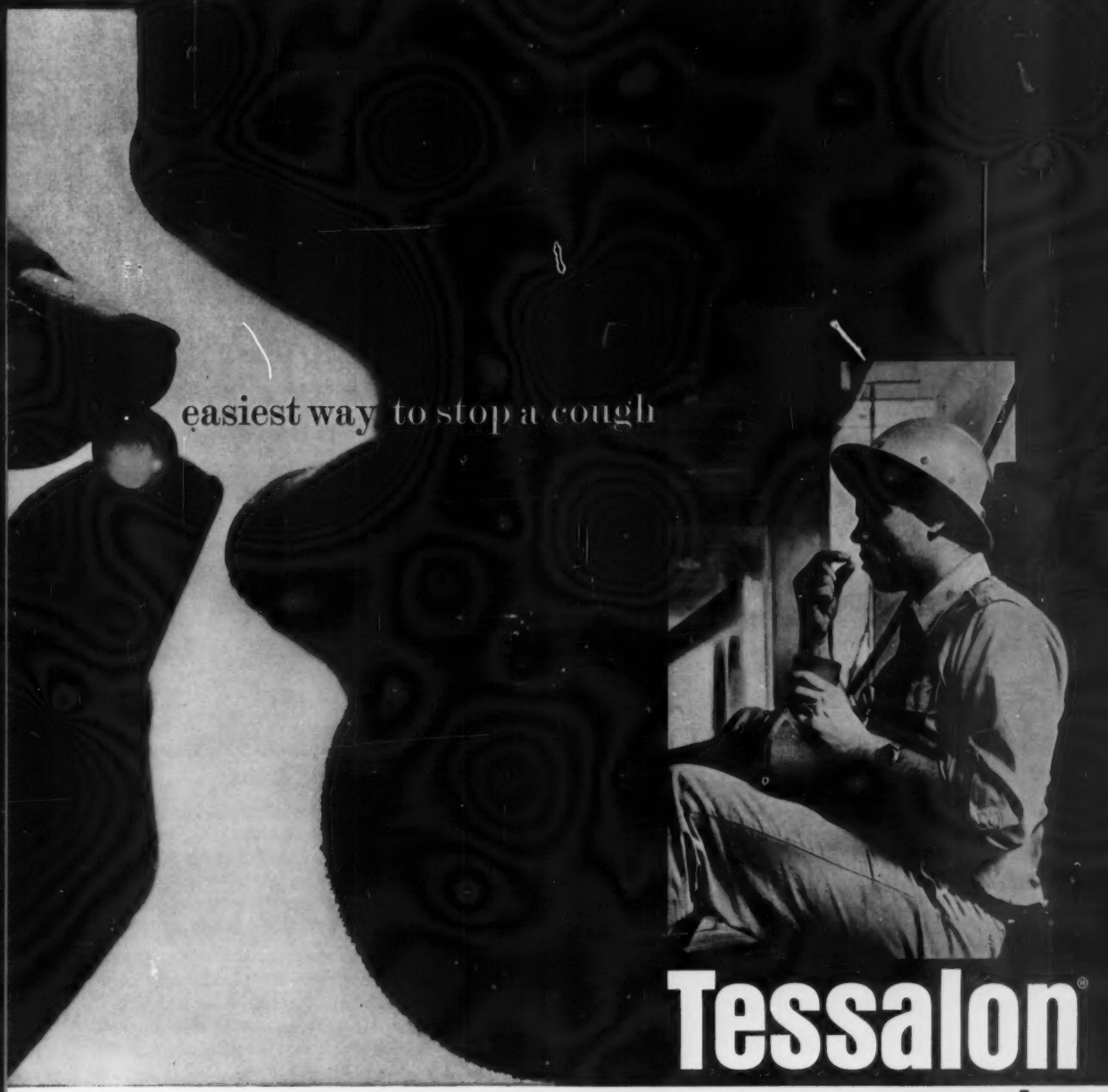
Officers said two hypodermic needles were beside the body. Two plastic bags, apparently from a dry cleaners, covered the doctor's head. The coroner's office is investigating.

DR. JACKEMY was a graduate of the University of California School of Medicine and interned at Highland Hospital, Oakland.

He had been associated with Alameda Hospital, Oakland's Providence Hospital, Richmond Hospital and Herrick Memorial Hospital, Berkeley.

He served in the Army Medical Corps from 1940-1946, and became staff physician at Ford in 1950.

He was a member of the American and California Medical Associations and the Western Industrial Medical Association.



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1. Shane, S. J., Krzyski, T. K., and Copp, S. E.: Canad. M. A. J. 77:600 (Sept. 15) 1957.

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. . . "rapidly and completely relieved of symptoms"

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"...many employees were able to resume work within an hour."

"There was no evidence of undesirable side reactions."

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are particularly useful for industrial therapy, because once-a-day dosage provides effective spasmolysis for a twelve-hour period without the inconvenience of the customary four-hour dosage schedule. True *extended action* spasmolytic effects are provided by the special construction of Extentabs. Immediately after administration the equivalent of one Donnatal tablet is released, followed by the gradual and uniform release of the equivalent of two more Donnatal tablets, to provide sustained effects for 10 to 12 hours.

Each Donnatal tablet or capsule or each 5 cc. teaspoonful of Donnatal Elixir contains: hyoscyamine sulfate 0.1037 mg., atropine sulfate 0.0194 mg., hyoscine hydrobromide 0.0065 mg., phenobarbital (¼ gr.) 16.2 mg.—bottles of 100, 500, and 1000 tablets or capsules, and bottles of 1 pint and 1 gallon of elixir.

Donnatal No. 2 Tablets contain the same amounts of belladonna alkaloids with 32.4 mg. (½ gr.) phenobarbital per tablet—bottles of 100 and 500 tablets.

Donnatal Extentabs contain active ingredients equivalent to three regular Donnatal tablets—bottles of 100 and 500.

*Frank W. Barden, M.D., Paul S. Hill, M.D., William F. Mahoney, M.D., and Kenneth J. Cuneo, M.D., in a report from the Medical Department of the Saco-Lowell Shops and the Webber Memorial Hospital, Biddeford, Maine; published in the January, 1954 issue of the Journal of the Maine Medical Association (Vol. XXXXV, No. 1, Page 11).

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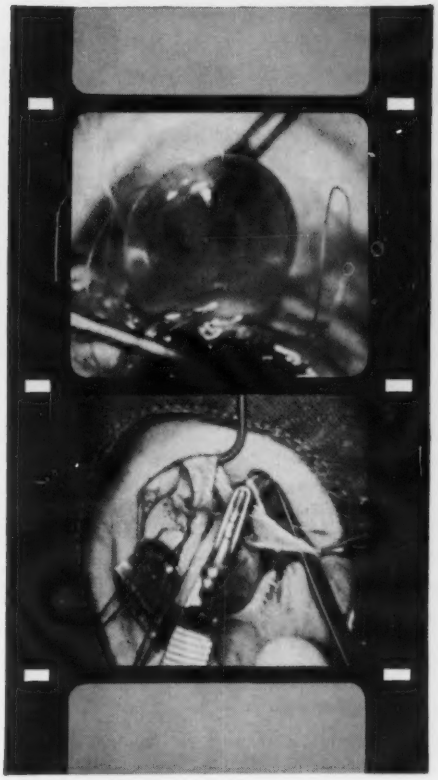

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16 mm., color, sound, 15 min.

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by Louis J. Girard:

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Fast relief of headache and muscle-joint pains without salicylate gastric irritation

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For fast analgesic and anti-inflammatory benefits without salicylate gastric irritation, dispense BUFFERIN.

*Based on 8.7% patient intolerance to salicylate therapy reported by Tebrock, H. E.: Ind. Med. & Surg. *20*:480-482, 1951.

1. Kelly, J. J., Jr.: Am. J. Med. Sci. *232*:119-128 (Aug.) 1956.

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better safe than sorry

No doubt about it. It *is* better to be safe than sorry. **And when you prescribe Mysteclin-V, you are playing safe.** Mysteclin-V – a combined broad spectrum antibiotic/antifungal agent is specially designed to combat most of the commonly encountered pathogenic organisms[1] and, simultaneously, to protect against fungal superinfections.[2,3] With the increased use of broad spectrum antibiotics the incidence of such superinfections has risen and the danger of superinfection is especially great in pregnant patients, in diabetics, and in those who require long courses of antibiotic therapy.

Mysteclin-V controls infection and prevents superinfection – with the proved effectiveness of tetracycline phosphate complex and Mycostatin, the first safe antifungal antibiotic. Thousands of successfuly treated cases[4-6] of respiratory, urinary tract, intestinal, and miscellaneous infections attest to the safety and clinical effectiveness of Mysteclin-V. When *you* prescribe Mysteclin-V, you make a telling assault on bacterial infection and prevent fungi from gaining a foothold.

Supplied: Capsules (250 mg./250,000 u.), bottles of 16 and 100/Half-strength Capsules (125 mg./125,000 u.), bottles of 16 and 100/Suspension (125 mg./125,000 u. per 5 cc.), 2 oz. bottles/Pediatric Drops (100 mg./100,000 u. per cc.), 10 cc. dropper bottles.

'MYSTECLIN'®, 'SUMYCIN'®, AND 'MYCOSTATIN'® ARE SQUIBB TRADEMARKS

References: 1. Cronk, G.A.; Naumann, D.E., and Casson, K.: Antibiotics Annual 1957-1958, New York, Medical Encyclopedia Inc., 1958, p. 397. 2. Childs, A.J.: Brit. M.J. *1*:660 (Mar.) 1956. 3. Newcomer, V.D.; Wright, E.T., and Sternberg, T.H.: Antibiotics Annual 1954-1955, New York, Medical Encyclopedia Inc., 1955, p. 686. 4. Gimble, A.I.; Shea, J.G., and Katz, S.: Antibiotics Annual 1955-1956, New York, Medical Encyclopedia Inc., 1956, p. 676. 5. Stone, M.L., and Mersheimer, W.L.: Antibiotics Annual 1955-1956, New York, Medical Encyclopedia Inc., 1956, p. 862. 6. Campbell, E.A.: Prigot, A., and Dorsey, G.M.: Antibiotic Med. & Clin. Ther. *4*:817 (Dec.) 1957.

Mysteclin-V

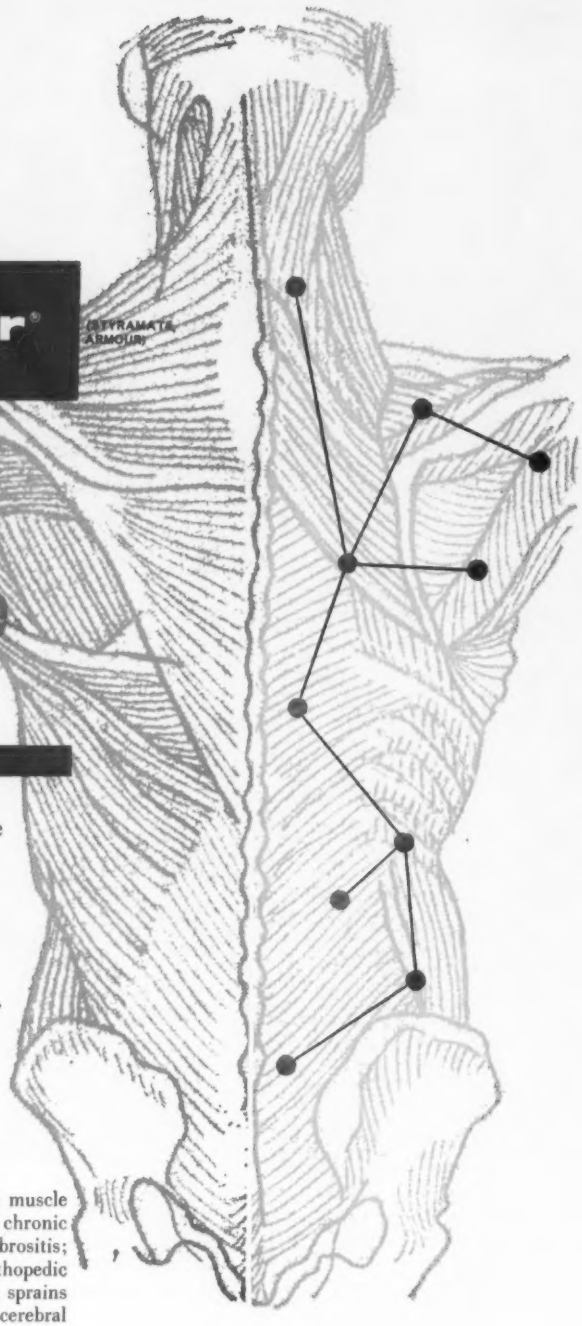
SQUIBB TETRACYCLINE PHOSPHATE COMPLEX (SUMYCIN) AND NYSTATIN (MYCOSTATIN)

SQUIBB

Squibb Quality –
the Priceless Ingredient

rely on

Sinaxar®



a specific skeletal muscle relaxant

Chemically unlike any other muscle relaxant, Sinaxar is

- **consistently effective in the majority of cases**
- **long acting: no fleeting effects**
- **purely a skeletal muscle relaxant . . . free of adverse physical or psychic effects frequently encountered with tranquilizers**

DOSAGE: *Two tablets three or four times daily.*

SUPPLIED: *200 mg. tablets in bottles of 50.*

INDICATIONS: Any condition involving skeletal muscle spasm, as ***musculoskeletal disorders:*** acute and chronic back ache; arthritides; bursitis; disc syndrome; fibrositis; myalgia; myositis; osteoarthritis; following orthopedic procedures; rheumatoid arthritis; spondylitis; sprains and strains; torticollis; ***neurologic disorders:*** cerebral palsy; cerebrovascular accidents; cervical root syndrome; multiple sclerosis.

ARMOUR

ARMOUR PHARMACEUTICAL COMPANY • *A Leader in Biochemical Research* • KANKAKEE, ILLINOIS

Her specialty is baked tobacco

You might say this laboratory technician "spends all day over a hot stove." Her job: determining the moisture content of tobacco by baking it under carefully controlled laboratory conditions.

Tobacco samples are weighed and then dried in special ovens in The American Tobacco Company's Research Laboratory. When the tobacco is weighed again, moisture loss is revealed.

This "baking" test is actually a check on a larger system of moisture-content tests. Since proper moisture content is vitally important to a cigarette's taste, *all* our tobacco is checked continuously by sensitive electronic meters. The amount of moisture registered every day on the meters must correspond exactly with the amount of moisture lost in the baking test.

This diligent system of checks and cross checks is one more way in which American Tobacco uses its experience with tobacco to produce cigarettes of matchless quality.

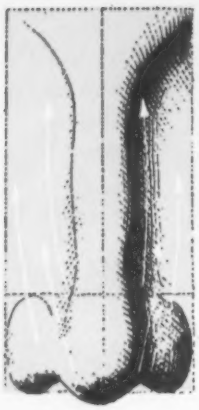
The American Tobacco Company

FIRST IN CIGARETTE RESEARCH

LUCKY STRIKE • PALL MALL • HIT PARADE • HERBERT TAREYTON • DUAL FILTER TAREYTON

penetrating
NOSE-OPENER
BIOMYDRIN®

nasal spray
drops



speeds medication to the site of irritation

penetrates, causing prompt dispersion of mucoid secretions. This deep infiltration allows all therapeutic agents to remain active for prolonged periods.

spreads almost instantly.

clears the air passages.

decongests without causing rebound congestion.

controls the allergic component.

combats infections.

safe—no pediatric dosage form is needed.

WARNER CHILCOTT

MORRIS PLAINS, N. J.

Thonzonium bromide 0.05%
Neomycin sulfate 0.1%
Gramicidin 0.005%
Thonzylamine HCl 1.0%
Phenylephrine HCl 0.25%
15 ml. atomizer or dropper bottle.

Also, **Biomydrin® F nasal spray** with hydrocortisone alcohol 0.02% – useful in the most stubborn cases of edema and inflammation. 15 ml. atomizer.

Counteract Depression with
distinctively WELL-TOLERATED

Deaner®

deanol acetamidobenzoate

- 'Deaner' may be prescribed with little or no concern over side effects even in the presence of liver disease, diabetes, cardiovascular disease, and a long list of other chronic conditions, except grand mal epilepsy (only contraindication).
- 'Deaner' *is not a monoamine oxidase inhibitor;* hence it is not necessary to monitor its administration with repeated, expensive laboratory tests.
- This notable freedom from side effects endows Deaner's long-term administration with easier patient supervision, better patient cooperation, and greater safety.
- Dosage is simple—initially, 50 mg. (2 tablets) daily in the morning. *Gradually, apathy and defeat are transformed into affability and renewed interest and vigor.*

Write for details and the applicability of 'Deaner' in behavior problems of children

Riker Northridge, California

New ORAL DECONGESTANT

DRISTAN®

TABLETS

afford a new degree of symptomatic relief from

- **SINUSITIS**
- **THE COMMON COLD**
- **ALLERGIC DISORDERS**

Minimizes the Hazard of Drowsiness on the Job

as compared with other preparations containing antihistamines

Unique 3-layer decongestant tablet development offers a combination of ingredients never before possible to put into a single tablet.

DRISTAN—*Faster In Therapeutic Action*

Regular Enteric Coated Tablet	3-Layer Uncoated Dristan Tablet
Disintegrates in 3 hours	Disintegrates in 7 minutes

Dristan Decongestant Tablets—afford *a new degree of relief* from the symptoms of sinusitis, nasal allergies, postnasal drip and the common cold by releasing:

(1) A POWERFUL VASCOCONSTRICTOR . . . phenylephrine hydrochloride. This shrinks swollen sinus membranes and promotes proper drainage.

(2) A UNIQUE ANTIHISTAMINE . . . phenindamine tartrate. Rarely produces drowsiness. Controls the edema and discharge caused by offending allergens.

(3) VITAMIN C. Under body stress such as fever and infectious diseases — the normal requirements double. The daily dose of Vitamin C in Dristan is *more than twice* the recommended daily allowance.

(4) Approved APC formula . . . aspirin, phenacetin and caffeine.

Professional Supplies on Request:
Ask the detail man from Whitehall Laboratories or send request on your professional letterhead to:

References: Annals of Allergy, Vol. 6. July-August 1948. Study of a New Histamine Antagonist, The Pennsylvania Med. J., Vol. 51. Clinical Study of a New Antihistaminic Drug—Phenindamine. Dristan Clinical Study.

WHITEHALL LABORATORIES
22 EAST 40TH STREET, NEW YORK 16, N. Y.

How many patients today complained about pain?

non-narcotic—pain relief equivalent to that of codeine

well tolerated in both acute and prolonged use

wide range of indications—general practice and the specialties

analgesia plus anti-inflammatory action

Supplied: Tablets, bottles of 48. Each tablet contains 75 mg. of ethoheptazine citrate and 325 mg. (5 grains) of acetylsalicylic acid.

remember

PAIN Zactirin®

Ethoheptazine Citrate with Acetylsalicylic Acid, Wyeth

Wyeth
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ORALLY EFFECTIVE THERAPY

OF DERMATOMYCOSES

GRiFULV

PENETRATES THE KERATIN BARRIER

FROM THE INSIDE

Since topical agents are unable to reach pathogenic fungi lodged deep in the keratin of the skin, hair or nails, a systemic therapy for superficial mycoses has been a long-sought therapeutic goal. GRIFULVIN dramatically achieves that goal.

Absorbed from the gastrointestinal tract, GRIFULVIN is deposited in the keratin of the skin, hair or nails in fungistatic amounts. Organisms are thus held in check while the keratin containing viable but inactive fungi is gradually exfoliated and replaced by noninfected tissue.

- Tinea corporis usually clears in 2 to 4 weeks; itching stops in 3 to 5 days.
- Tinea pedis improves in 1 to 2 weeks; complete clearing may require 3 to 6 weeks.
- Tinea capitis improves in 2 to 3 weeks; is usually cured in 3 to 5 weeks.
- Onychomycosis (tinea unguium) — fingernails clear in 3 to 4 months; new normal growth is seen earlier; toenails require longer treatment.
- Oral GRIFULVIN appears to have a very low level of toxicity.

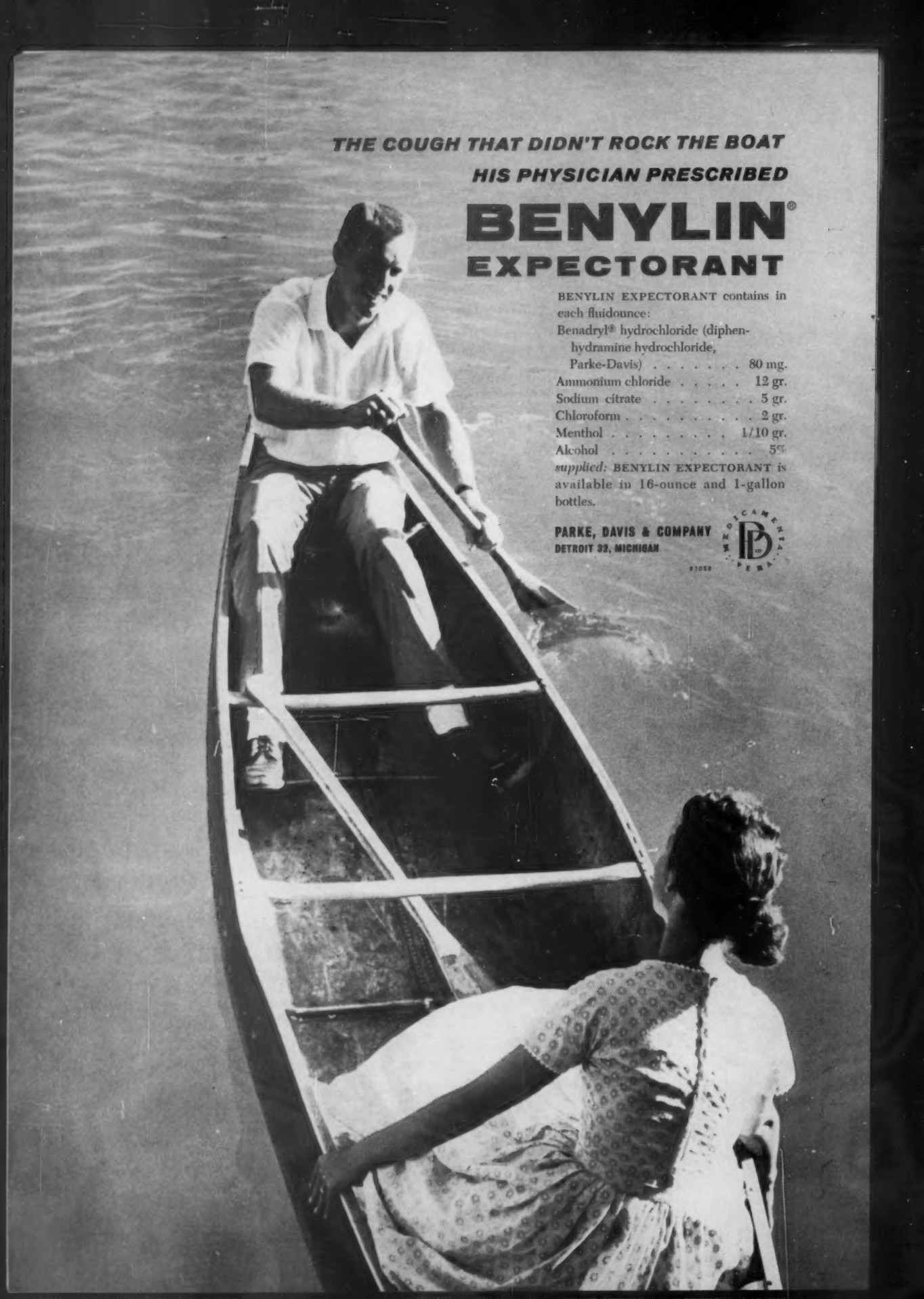
Literature concerning method of administration and dosage is available upon request.

Supplied: 250 mg. scored tablets, colored aquamarine, imprinted McNEIL, bottles of 16 and 100.

McNEIL

McNeil Laboratories, Inc • Philadelphia 32, Pa.

257A89


THE COUGH THAT DIDN'T ROCK THE BOAT
HIS PHYSICIAN PRESCRIBED
BENYLIN®
EXPECTORANT
BENYLIN EXPECTORANT contains in each fluidounce:
Benadryl® hydrochloride (diphenhydramine hydrochloride, Parke-Davis) . . . . . 80 mg.
Ammonium chloride . . . . . 12 gr.
Sodium citrate . . . . . 5 gr.
Chloroform . . . . . 2 gr.
Menthol . . . . . 1/10 gr.
Alcohol 5%
supplied: BENYLIN EXPECTORANT is available in 16-ounce and 1-gallon bottles.
PARKE, DAVIS & COMPANY
DETROIT 32, MICHIGAN
MEDICAMENTA VERA
93059

new for total management of itching,[1,2] inflamed,[3,4] infected[5,6] skin lesions

Dermatitis repens
7 weeks duration

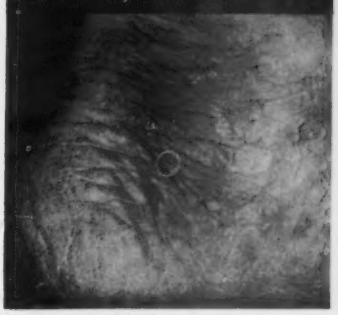
Cleared in 5 days

Mycolog ointment

Kenalog, Spectrocin and Mycostatin in Plastibase

antipruritic/anti-inflammatory/antibacterial/antifungal

Infectious eczematoid dermatitis of ankle—5 years duration



Cleared in 20 days

Mycolog Ointment – containing the new superior topical corticoid Kenalog – reduces inflammation,[3,4] relieves itching,[1,2] and combats or prevents bacterial, monilial and mixed infections.[5-7] It is extremely well tolerated, and assures a rapid, decisive clinical response for most infected dermatoses.

> **"Thirty-one of 38 patients . . . obtained excellent or good control of dermatological lesions . . . [Mycolog] was highly effective, particularly in the management of mixed infections. Several recalcitrant eruptions which had not responded to previous therapy were remarkably responsive to the daily application of this preparation over periods of 2 to 3 weeks."[5]**

For total management of itching, inflamed, infected skin lesions, Mycolog contains triamcinolone acetonide, an outstanding new topical corticoid for prompt, effective relief of itching, burning and inflammation[1-4] – neomycin and gramicidin for powerful antibacterial action[7] – and nystatin for treating or preventing Candida (Monilia) albicans infections.[8,9]

Application: Apply 2 to 3 times daily. Supply: 5 Gm. and 15 Gm. tubes. Each gram supplies 1.0 mg. (0.1%) triamcinolone acetonide, 2.5 mg. neomycin base, 0.25 mg. gramicidin, and 100,000 units nystatin in PLASTIBASE.

References: 1. Shelmire, J.B., Jr.: Monographs on Therapy 3:164 (Nov.) 1958. • 2. Nix, T.E., Jr., and Derbes, V.J.: Monographs on Therapy 3:123 (Nov.) 1958. • 3. Robinson, R.C.V.: Bull. School of Med., U. Maryland 43:54 (July) 1958. • 4. Sternberg, T.H.: Newcomer, V.D., and Reisner, R.M.: Monographs on Therapy 3:115 (Nov.) 1958. • 5. Clark, R.F., and Hallett, J.J.: Monographs on Therapy, 3:153 (Nov.) 1958. • 6. Smith J.G., Jr.; Zawisza, R.J., and Blank, H.: Monographs on Therapy, 3:111 (Nov.) 1958. • 7. Monographs on Therapy, 3:137 (Nov.) 1958. • 8. Howell, C.M., Jr.: North Carolina M.J. 19:449 (Oct.) 1958. • 9. Bereston, E.S.: South. M.J. 50:547 (April) 1957.

And whatever the topical corticoid need, a suitable Squibb formulation is available—Kenalog-S Lotion—7½ cc. plastic squeeze bottles. Each cc. supplies 1.0 mg. (0.1%) triamcinolone acetonide, 2.5 mg. neomycin base and 0.25 mg. gramicidin. Kenalog Cream, 0.1%—5 Gm. and 15 Gm. tubes. Kenalog Lotion, 0.1%—15 cc. plastic squeeze bottles. Kenalog Ointment, 0.1%—5 Gm. and 15 Gm. tubes.

SQUIBB

Squibb Quality — the Priceless Ingredient

'SPECTROCIN'®, 'MYCOSTATIN'®, 'PLASTIBASE'®, 'MYCOLOG' AND 'KENALOG' ARE SQUIBB TRADEMARKS

NOW

...a new way to relieve pain and stiffness in muscles and joints

INDICATED IN:

MUSCLE STIFFNESS

LUMBOSACRAL STRAIN

SACROILIAC STRAIN

WHIPLASH INJURY

BURSITIS

SPRAINS

TENOSYNOVITIS

FIBROSITIS

FIBROMYOSITIS

LOW BACK PAIN

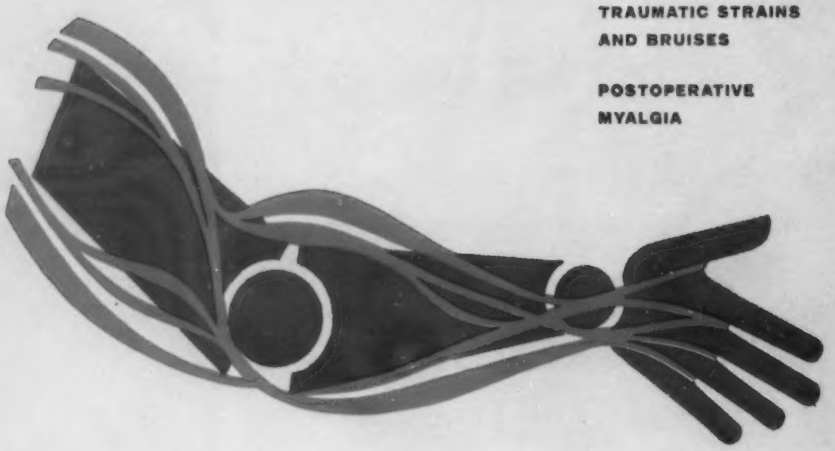
DISC SYNDROME

SPRAINED BACK

"TIGHT NECK"

TRAUMATIC STRAINS AND BRUISES

POSTOPERATIVE MYALGIA



■ Exhibits unusual analgesic properties, different from those of any other drug ■ Specific and superior in relief of SOMAtic pain ■ Modifies central perception of pain without abolishing natural defense reflexes ■ Relaxes abnormal tension of skeletal muscle

SOMA™

N-isopropyl-2-methyl-2-propyl-1, 3-propanediol dicarbamate

■ More specific than salicylates ■ Less drastic than steroids

■ More effective than muscle relaxants

SOMA has an unique analgesic action. It apparently modifies central pain perception without abolishing peripheral pain reflexes. SOMA is particularly effective in relieving joint pain. Patients say that they feel better and sleep better with SOMA than with any previously used analgesic, sedative or relaxant drug.
SOMA also relaxes muscle hypertonia, with its stresses on related joints, ligaments and skeletal structures.

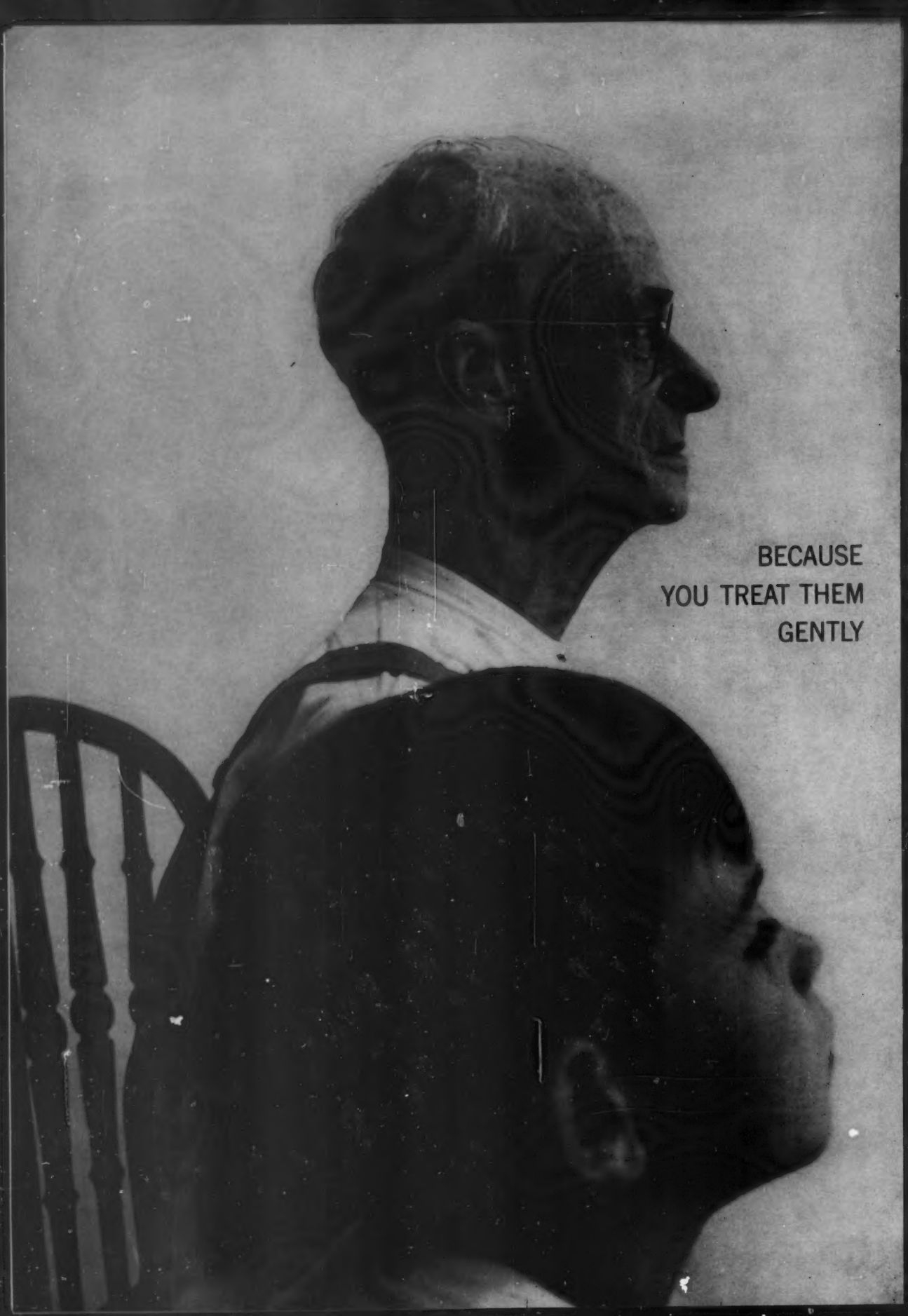
ACTS FAST. Pain-relieving and relaxant effects start in 30 minutes and last 6 hours.

NOTABLY SAFE. Toxicity of SOMA is extremely low. No effects on liver, endocrine system, blood pressure, blood picture or urine have been reported. Some patients may become sleepy on high dosage.

EASY TO USE. Usual adult dose is one 350 mg. tablet 3 times daily and at bedtime.

SUPPLIED: Bottles of 50 white sugar-coated 350 mg. tablets.
Literature and samples on request.

WALLACE LABORATORIES, NEW BRUNSWICK, N. J.


BECAUSE
YOU TREAT THEM
GENTLY

"In no case . . .
was there any rebound congestion."[1]

Your youngest patient as well as your oldest will find new Otrivin an unusually gentle yet remarkably effective nasal decongestant. Otrivin works quickly; its action is prolonged. Typical of many clinicians' reports is the one published by Kolodny[1]: Of 64 patients studied, 92 per cent had good or excellent results. "In no case studied was there any rebound congestion. Local side effects were minimal. . . . Extremely few systemic effects occurred. . . ."

NEW
OTRIVIN® FOR GENTLE RELIEF OF STUFFY NOSE
ON PRESCRIPTION ONLY

Otrivin is safe even for the very young. "The particularly striking feature of Otrivin solution was the absence of side effects, even in infants as young as two weeks."[2] "It is effective in low concentrations and is a safe nasal vasoconstrictor for even the young patient."[3]

SUPPLIED: Otrivin *Nasal Solution*, 0.1%; dropper bottles of 1 ounce. Otrivin *Nasal Spray*, 0.1%; plastic squeeze tubes of 15 ml. Otrivin *Pediatric Nasal Spray*, 0.05%; plastic squeeze tubes of 15 ml.

REFERENCES: 1. Kolodny, A. L.: Antibiotic Med. *6*:452 (Aug.) 1959. 2. Davis, M. R.: To be published. 3. Peluse, S.: In press.

Otrivin® hydrochloride (xylometazoline hydrochloride CIBA) 2/2752MK

CIBA SUMMIT, N. J.

thanks to

DESITIN®

hemorrhoidal

SUPPOSITORIES

with cod liver oil

Samples and literature available from

DESITIN CHEMICAL COMPANY • 812 Branch Ave., Providence 4, R. I.

relieves painful muscle spasm, improves mobility, facilitates rehabilitation...

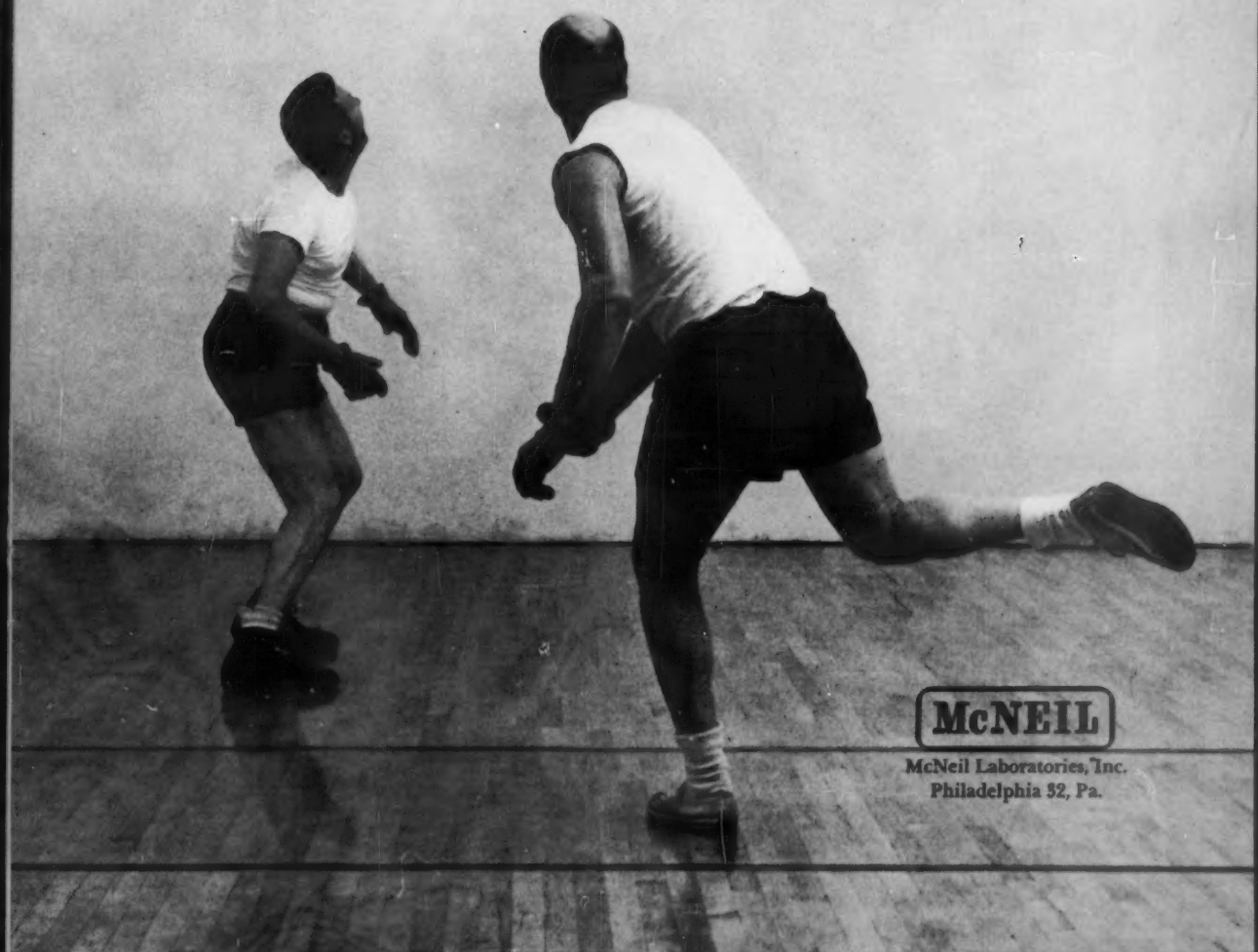
PARAFLEX®

Chlorzoxazone*

PARAFLEX provides effective skeletal muscle relaxation for about 6 hours with a 1- to 2-tablet dose. It relieves pain and stiffness and improves function in a wide variety of orthopedic, arthritic, and rheumatic disorders. It may be used alone or with other agents indicated in the management of skeletal muscle spasm. It is especially valuable when used in conjunction with physiotherapy and other rehabilitative procedures. Side effects are rare, almost never require discontinuance of therapy.

Dosage: ADULTS—1 to 2 tablets three or four times a day.
CHILDREN—½ to 2 tablets three or four times a day, depending on age and weight.
Supplied: Tablets, scored, orange, bottles of 50. Each tablet contains PARAFLEX, 250 mg.

*U.S. Patent Pending 2594A59



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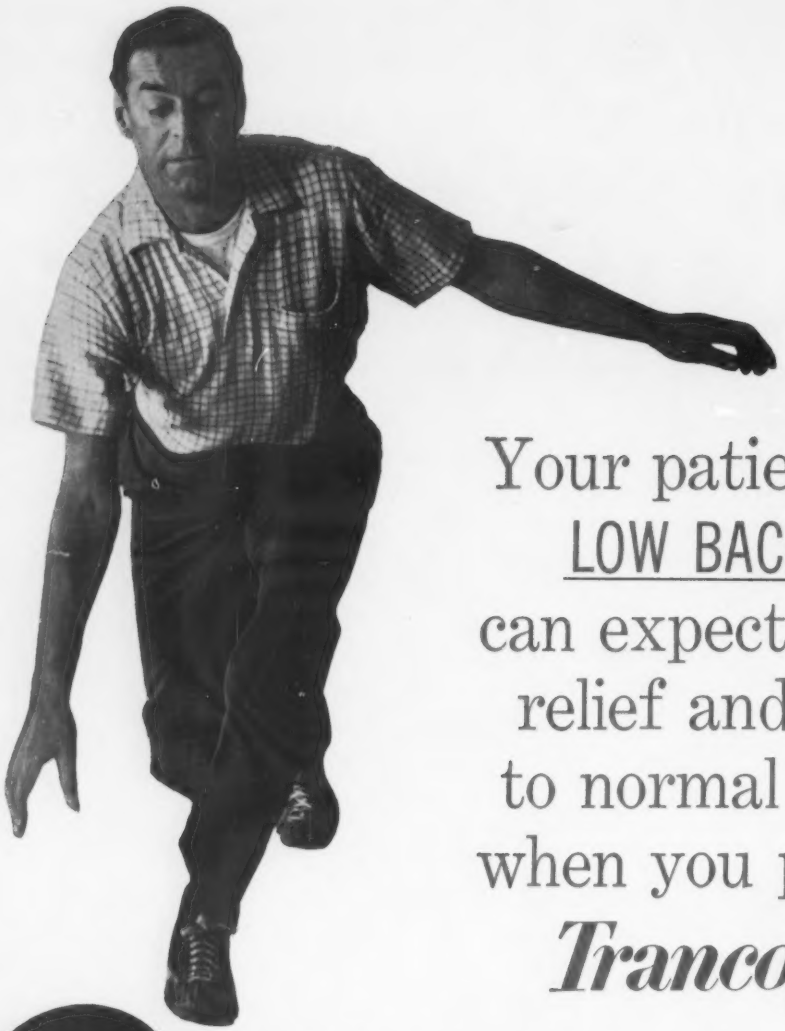


Your patients with LOW BACK PAIN can expect striking relief and return to normal activity when you prescribe *Trancopal*

case profile.[1] A 42-year-old truck driver and mover injured his back while moving a piano. The pain radiated from the sacral region down to the region of the Achilles tendon on the right side. X-rays for ruptured disc revealed nothing pertinent. The day of the injury he was given Trancopal immediately after the physical examination. Although 100 to 200 mg. three times a day were prescribed, the patient on his own responsibility increased the dosage of Trancopal to 400 mg. three times a day. This dosage was continued for three days and then gradually reduced over a ten day period. During this time, the patient continued to drive his truck. The muscle spasm was completely controlled and no apparent side effects were noted. For the past six months, the patient has continued to take Trancopal 100 to 200 mg. as needed for muscle spasm, particularly during strenuous days.

Indications: Musculoskeletal: Neck pain (torticollis) / Ankle sprain, tennis elbow / Bursitis / Rheumatoid arthritis / Low back pain (lumbago, etc.) / Fibrositis / Myositis / Osteoarthritis / Postoperative muscle spasm / Disc syndrome. *Psychogenic:* Dysmenorrhea / Anxiety and tension states / Asthma / Premenstrual tension / Angina pectoris / Alcoholism.

Now available in two strengths: Trancopal Caplets®, 100 mg. (peach colored, scored), bottles of 100. New strength—Trancopal Caplets, 200 mg. (green colored, scored), bottles of 100.
Dosage: Adults, 100 or 200 mg. orally three or four times daily. Relief of symptoms occurs in from fifteen to thirty minutes and lasts from four to six hours.

THE FIRST TRUE "TRANQUILAXANT"

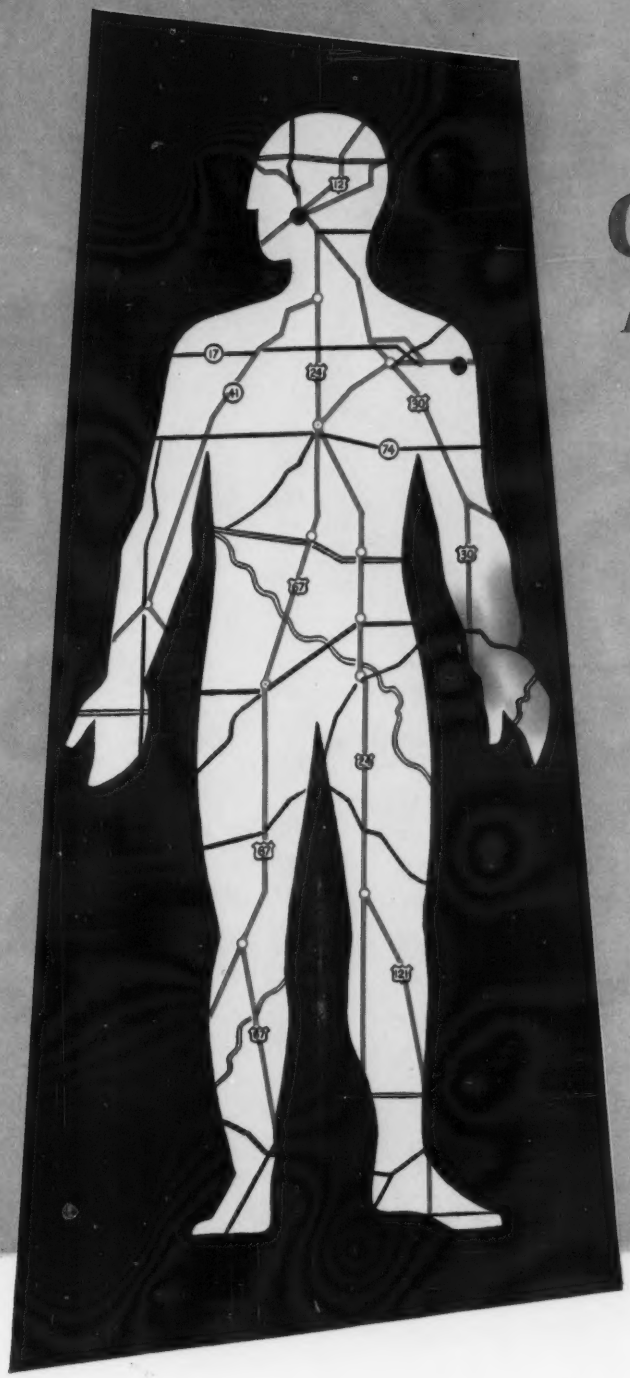
Trancopal®

Winthrop LABORATORIES • NEW YORK 18, N.Y.

1. Collective Study, Department of Medical Research, Winthrop Laboratories.

Trancopal (brand of chlormezanone) and Caplets, trademarks reg. U.S. Pat. Off. 1416M

faster
healing
at any location



CHYMAR®

Buccal | Aqueous | Oil

superior anti-inflammatory enzyme

in industrial accidents
controls inflammation, swelling and pain

Chymar prevents or reduces all types of inflammatory changes. It quickly dissipates edema and blood extravasates to improve local circulation, accelerate healing, relieve pain. Side effects that have been observed with steroid-type anti-inflammatory agents do not occur with Chymar.

Chymar is effective as routine first aid in:

major sprains • fractures • bruises
contusions • hematomas • wounds

CHYMAR *Buccal*—Crystallized chymotrypsin in a tablet formulated for buccal absorption. Bottles of 24 tablets. Enzymatic activity, 10,000 Armour Units per tablet.

CHYMAR *Aqueous*—Solution of crystallized chymotrypsin in sodium chloride injection for intramuscular use. Vials of 5 cc. Enzymatic activity, 5000 Armour Units per cc.

CHYMAR—Suspension of crystallized chymotrypsin in oil for intramuscular injection. Vials of 5 cc. Enzymatic activity, 5000 Armour Units per cc.

ARMOUR PHARMACEUTICAL COMPANY • KANKAKEE, ILLINOIS

Armour Means Protection

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25,000,000 courses of treatment – and NO "resistance" problems

*Conservative estimate based on combined use of all FURACIN preparations since 1945.

FURACIN®

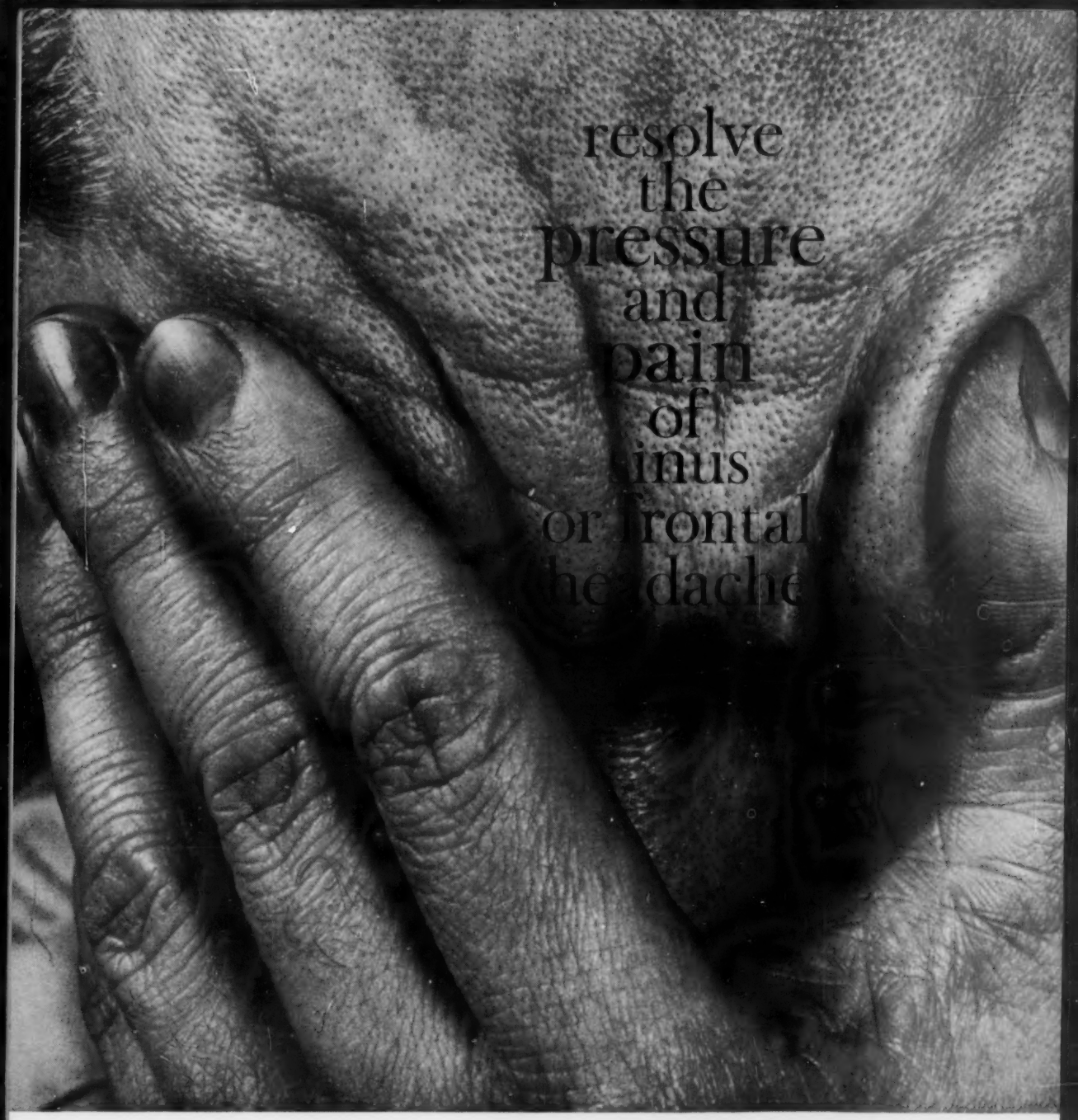
brand of nitrofurazone

In clinical use for more than 12 years and today the most widely prescribed single topical antibacterial, FURACIN—like other nitrofurans—remains effective against pathogens which have developed, or are prone to develop, resistance to other antibacterial agents. There has been no evidence that originally sensitive strains of staphylococci or other bacteria lose their susceptibility to FURACIN in any significant degree.

the wide-spectrum antibacterial exclusively for topical use ... in dosage forms for every topical need

Available as Soluble Dressing, Soluble Powder, or Solution. Also in Vaginal and Urethral Suppositories and in special formulations for eye, ear and nose.

one of the unique nitrofurans– products of Eaton research
Eaton Laboratories, Norwich, New York



with new Sinutab*

Sinutab aborts pain, decongests and provides patient-comfort

Sinutab aborts pain with two analgesics, systemically opens air passages to relieve stuffiness and congestion and provides patient-comfort with mild tranquilization.

*TRADEMARK

DOSAGE: *Adults,* two tablets every four hours. Prophylactically, one tablet every four hours. *Children 6 to 12 years,* one-half adult dose. SUPPLIED: Bottles of 30 tablets. SINUTAB FORMULATION: N-acetyl-para-aminophenol (APAP), 150 mg., (2½ gr.); Acetophenetidin, 150 mg., (2½ gr.); Phenylpropanolamine HCl, 25 mg., (⅜ gr.); Phenyltoloxamine Dihydrogen Citrate, 22 mg., (⅓ gr.)

WARNER CHILCOTT
MORRIS PLAINS, N.J.

deliciously flavored · decisively effective

NEW
ILOSONE® 125
Lauryl Sulfate
SUSPENSION

Formula:
Each 5-cc. teaspoonful provides Ilosone Lauryl Sulfate equivalent to 125 mg. erythromycin base activity.

Usual Dosage:

10 to 25 pounds	5 mg. per pound of body weight	every six hours
25 to 50 pounds	1 teaspoonful	
Over 50 pounds	2 teaspoonfuls	

In more severe infections, these dosages may be doubled.

Supplied:
In bottles of 60 cc.

Ilosone® (propionyl erythromycin ester, Lilly)
Ilosone® Lauryl Sulfate (propionyl erythromycin ester lauryl sulfate, Lilly)

ELI LILLY AND COMPANY • INDIANAPOLIS 6, INDIANA, U.S.A.
932702

Effects of Environmental Temperature and Air Volume Exchange on Survival of Rats Exposed to Microwave Radiation of 24,000 Megacycles

• WILLIAM B. DEICHMANN, Ph.D., F.R.S.
• E. BERNAL, Ph.D. and • M. KEPLINGER, Ph.D.
Department of Pharmacology
University of Miami School of Medicine, Coral Gables, Florida

Investigators who have concerned themselves with microwave radiation have long felt that the effects noted in experimental animals can be explained on a thermal basis. However, a systematic study showing that the effects on the animal are in direct relation to environmental temperature and air currents apparently has not been reported before.

Experimental

Female albino rats of Osborne-Mendel stock were used, with the exception of the control rats in the third experiment. These were Sprague-Dawley animals. All rats were housed in air-conditioned quarters (24°C ± 1°C). They were exposed individually to microwaves (1.25 cm) in an absorbent-lined, 1,130 liter chamber equipped with a 10 db standard horn antenna directed down upon an animal.[1] During an exposure, a rat was restrained in the prone position by a Plexiglas holder described in detail elsewhere.[1] The animal was prevented from turning on its long axis by taping its tail with Scotch Tape to the holder. This was important in directing the exposure solely to the lumbar area. In all experiments, exposure was kept constant at 250 mw/cm^2. Rectal temperatures were determined by a mercury thermometer, and by a flexible plastic-covered probe connected to a thermistor thermometer bridge with a range from 35° to 46° C.

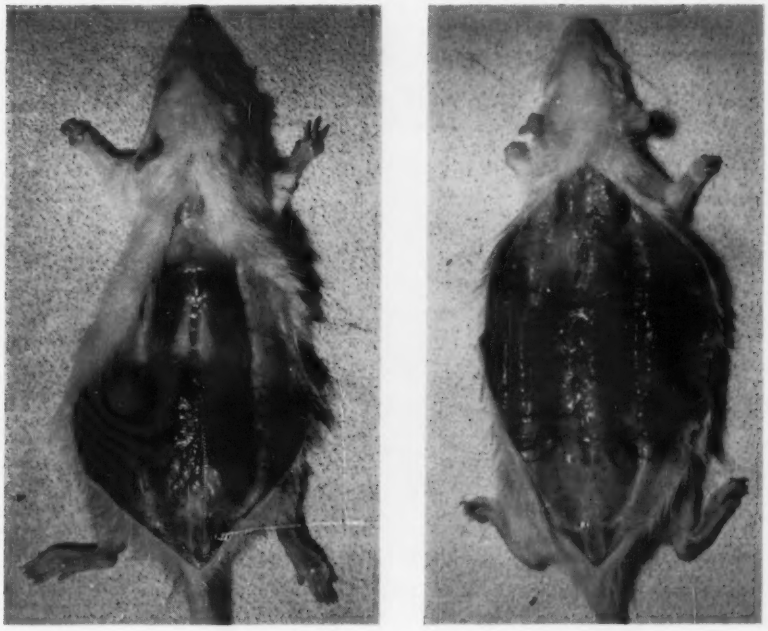


Figure 2
Both rats were exposed continuously to 250 mw/cm^2 until death. The rat on the left died after 20 minutes of exposure in an environmental temperature of 25°C. The rat on the right survived 21 hours of exposure in an environmental temperature of 15° and benefited by air (15°) from a 1/15 H.P. blower. The local changes in the two rats were essentially the same and were characterized by marked hyperemia, diffuse hemorrhages and massive edema, indicating first, second and third degree burns.

Presented at the Third Tri-Service Conference on Biological Hazards of Microwave Radiation, Berkeley, California, August 25 - 27, 1959.

The investigation was sponsored by the Rome Air Development Center Air Research and Development Command, United States Air Force.

Results

Three experiments were conducted. In the first, all rats were exposed *continuously* until death to determine the relationship between environmental temperature and period of survival. This was found to be as fc'lows:

No. of Rats Exposed	Temperature in Exposure Chamber °C	Mean Period of Survival min
10	35 ± 0.5	17.4 (16.5 to 19 min)
10	30 ± 0.5	21.0 (18 to 23 min)
10	25 ± 0.5	26.8 (23 to 30 min)
10	20 ± 0.5	36.3 (30 to 46 min)
10	15 ± 1.0	47.0 (40 to 63.5 min)

TABLE I.
EFFECT OF ENVIRONMENTAL TEMPERATURE ON THE RECTAL TEMPERATURE OF THE RAT CONTINUOUS EXPOSURE TO 250 MW/CM² UNTIL DEATH
(The table gives the highest rectal temperature recorded for each of three rats. Ten rats were exposed individually per group. Rats were in prone position, exposure directed to the dorsal area)

Environmental Temperature (Air Speed Essentially Zero)				
15°C	20°C	25°C	30°C	35°C
Rectal Temperature in °C				
43.5	43.8	45.2	45.6	45.6
43.6	46.0	45.7	45.8	45.6
45.2	46.0	46.0	46.0	46.2

The effect of an environmental temperature was reflected in the rates of rise, but not on the maximum rectal temperatures produced (Table I, Figure 1). At death, the local effects in the lumbar area were similar, whether rats suffered exposure at environmental temperatures at 15° or 35°C (Figure 2). The changes ranged from first to third degree burns.

In a second experiment, rats were exposed *intermittently* until death. In this study, the current was *on* for one minute and *off* for three minutes. One group of animals was exposed at a chamber temperature of 30°C, the second group at 26.5°C, and the third group at 23°C. The data demonstrated again that the period of survival is markedly influenced by the environmental temperature at which microwave exposure occurs (Table II, Figure 3).

It was recognized that the period of survival of a rat depends largely on the animal's ability to eliminate or to compensate for, the microwave heat energy absorbed. In other words, the lower the environmental temperature (within the limits investigated), the more effective was the degree of compensation.

It was speculated that the period of survival might be further increased by blowing air onto an animal. In the following study, experimental conditions were the same as those described in the first experiment in which the environmental temperature was maintained at 15°C, except that in this case, a blower* was installed in the exposure chamber, circulating the air and blowing it onto the experimental and the control rat. The distance of the blower was about 30 cm from the experimental rat and 65 cm from the control rat. Obviously, the control rat was placed in such a position that it was subjected to a similar degree of cooling, but not to the effects of microwaves.

EFFECT OF ENVIRONMENTAL TEMPERATURE ON RECTAL TEMPERATURE IN THE RAT
(Continuous exposure to 250 mw/cm² ; prone pos., lumbar exposure; six female rats per group)

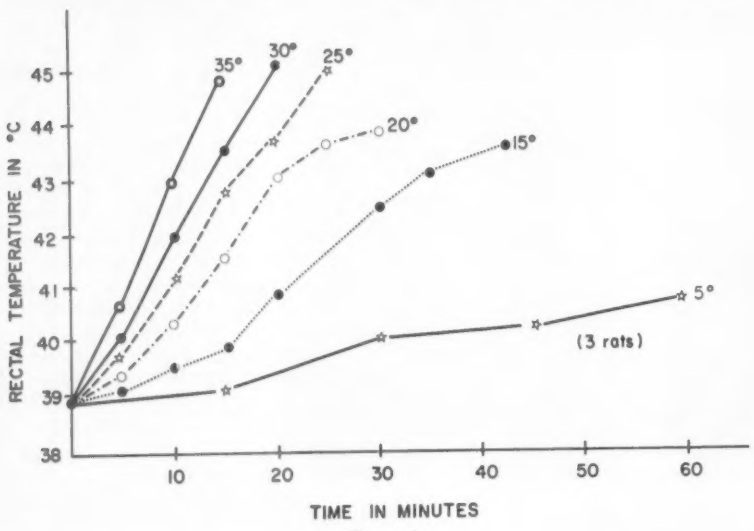


Figure 1

As stated above, when exposed continuously to microwave radiation at 15° C, rats died in 47 minutes (40 to 63.5 min) with rectal temperatures ranging from 42.5 to 45.2° C. Rats were found to live considerably longer when benefited by air from the blower. The periods of survival of eight rats ranged from 14 to 24 hours. One animal (D-1289) died after eight hours of exposure with

*Blower, 1/15 H.P., manufactured by the Dayton Electric Mfg. Co., Dayton, Ill. Outlet velocity 3230 ft/min, volume 140 cu ft/min at zero pressure.

its heart in diastole. This rat might be excluded since the ventricles of all other rats were found to be well contracted. The auricles, however, were uniformily dilated and filled with large clots of blood. The tenth rat (D-1084) survived 24 hours of exposure, at which time the experiment was discontinued. Control animals subjected to the same experimental conditions but not to microwave energy survived for 12 to 21 hours. The rectal temperatures of all rats dropped immediately when they were placed in the exposure chamber, but the temperatures of the control rats — not benefited by radar — dropped more precipitously than those of the experimental animals (Table III, Figure 4).

Discussion

The mechanisms controlling the body temperature of the rat and man are not alike. A rat seems to lack sweat glands, and it should therefore lose water by a mechanism different from that utilized by man. However, it is well known that when a rat is maintained in a stagnant, hot and humid atmosphere, that its fur becomes quite wet. To Sundstroem,[2] this implies "that the rat, in addition to the insensible water loss, is capable of covering its surface with a film of water, (this), physiologically, is the crucial point." Sundstroem believes that irrespective of any histological differences, the physiological function of the skin of man and small rodents, in regard to water elimination, may be comparable in a qualitative sense.

The relative humidity was recorded in all experiments. Since the values ranged from 60% to 85%, it is assumed that this factor influenced an animal's ability to maintain thermal homeostasis.

Future studies will be designed to investigate this factor.

It was possible to prolong the life of a rat exposed continuously to microwaves from 17 minutes to more than 17 hours by introducing an effective air volume exchange and by lowering the environmental temperature. Because of the effects of these two factors, a maximum safe exposure level of 10 mw/cm^2 can no longer be acceptable without also defining air temperature and air motion. However, if we should continue to accept this level as the maximum allowable dose, then we will have a marked factor of safety under certain environmental conditions.

Whether the wave length plays a significant role in influencing biological effects of a certain dose (expressed in mw/cm^2) has not yet been demonstrated quantitatively, but it is obvious that the period of exposure introduces a decisive factor.

Intermittent exposures to relatively low power densities, air currents, low environmental temperatures, and man's unique heat regulating system are some of the factors which have prevented serious injury. In fact it may be said that, for all practical purposes, harmful systemic effects of microwave radiation have not occurred.

TABLE II.

EFFECT OF ENVIRONMENTAL TEMPERATURE ON PERIOD OF SURVIVAL AND RECTAL TEMPERATURE OF THE RAT INTERMITTENT EXPOSURE, 1 MIN. ON, 3 MIN. OFF TO 250 MW/CM^2

(There were three rats per group, air speed in exposure chamber was essentially zero)

Environmental Temperature	Experimental Period min.	Time on or Actual Exposure Time Until Death min.	Mean Rectal Temperature at Death °C
30.0°C	120	31	43.4
26.5°C	335	85	42.2
23.0°C	480 (discontinued)	120 (survived)	39.6 (survived)

EFFECT OF ENVIRONMENTAL ON RECTAL TEMPERATURE OF THE RAT EXPOSED TO 250 mw/cm^2

(Exposure intermittent: 1 min. ON, 3 min. OFF; prone pos. lumbar area)

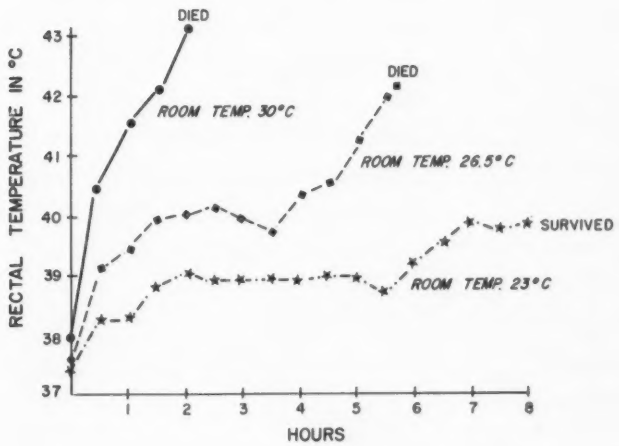


Figure 3

TABLE III.

EFFECT OF CONTINUOUS EXPOSURE OF RATS TO 250 MW/CM² AT AN ENVIRONMENTAL TEMPERATURE OF 15°C AND WHILE COOLED IN ADDITION BY A STREAM OF AIR FROM A 1/15 H.P. BLOWER

(Rats were exposed individually. They were in the prone position, exposure was directed to the lumbar area)

Experimental Conditions	Ident. No. of Rat	Periods of Survival	Rectal Temperatures at Death °C
15°C Exposure to 250 mw/cm² No Blower	D-786	36 minutes	
	D-787	40 minutes	
	D-780	41 minutes	44.3
	D-778	44 minutes	
	D-781	46 minutes	45.2
	D-782	47 minutes	43.3
	D-783	47 minutes	44.7
	D-779	51 minutes	
	D-785	52 minutes	42.5
	D-784	63 minutes	43.5
15°C Exposure to 250 mw/cm² Blower	D-1289*	8 hours	
	D-1093	14 hours	30
	D-1095	16 hours	26
	D-1091	16 hours	30
	D-1086	18 hours	
	D-1296	20 hours	29
	D-801	20 hours	20
	D-1292	24 hours	24
	D-1294	24 hours	27
	D-1084	discont. after 24 hours	29 when discont.
15°C No Exposure Blower	D-1291	12 hours	15.5
	D-1288	14 hours	15
	D-1094	15 hours	15
	D-1090	15 hours	15
	D-1293	15 hours	15
	D-1087	15 hours	16
	D-1092	16 hours	16
	D-802	16 hours	
	D-1085	21 hours	14.5
	D-1295	21 hours	15.5

*This rat died with heart in diastole.

EFFECT OF AIR CURRENT
ON SURVIVAL AND RECTAL TEMPERATURE OF THE RAT

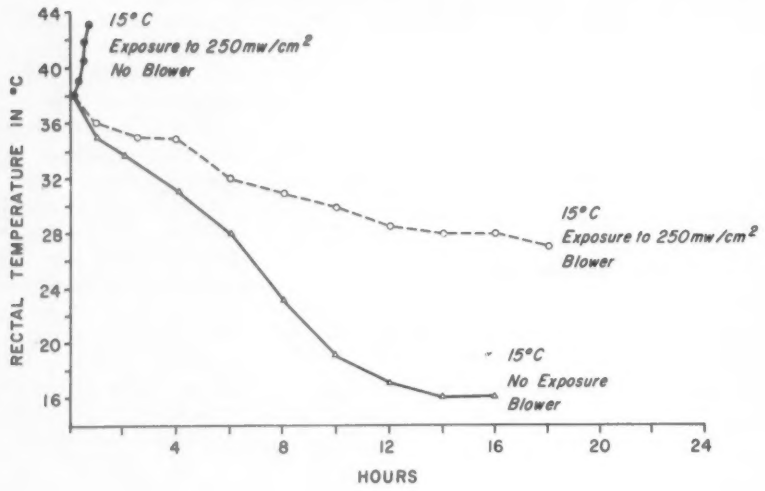


Figure 4

Certain accepted facts relating to the effects of microwaves will need modification unless air speed and volume and environmental temperature were considered and recorded at the time the experiment was conducted.

Conclusions

The environmental temperature was found to influence considerably the systemic effects of microwave radiation of 24,000 megacycles (1.25 cm). The period of survival of a rat was more than doubled (from 17.4 to 47.0 min) by a drop in environmental temperature from 35°C (95°F) to 15°C (59°F). A most remarkable prolongation of life was brought about by an effective air volume exchange. Rats exposed continuously to 250 mw/cm² at 15°C lived for 47 minutes (40 to 63.5 min). Rats exposed similarly but aided by air (15°C) from a blower in losing microwave-induced heat energy survived for eight to 24 hours.

Local effects were influenced similarly. However, at death, the severity of local damage (first to third degree burn) was essentially the same, whether a rat was exposed for 17 minutes at 35°C, or for 20 hours at 15°C when benefited by circulating air.

While the temperature controls of the rat and man differ, the physiological mechanisms are sufficiently alike to postulate that local and systemic effects of microwave radiation are least likely to occur in man if he is exposed under conditions of optimal ventilation and low environmental temperature.

Acknowledgement

The assistance of Mr. William E. Pate is gratefully recognized.

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Occupational Health in India

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Over-population is the main problem facing under-developed countries such as India. Man is multiplying so fast that he is over-reaching his food supply. Science beckons him to expand his industries and solve the food problem, but the progress of science is so rapid that man finds it difficult to keep pace without damaging his health. Moreover, industries can flourish only in service of man and through his labour. Yet the amazing thing is that few industrialists, especially in underdeveloped countries, hold at premium man's needs of health and growth.

Since the two world wars the only progress man has made is to prefer cold wars to shooting wars. To the man in the street this change-over means little. Both make it difficult for him to fulfill his desire to realise life through work and health. One way out of this dilemma is to pay more attention to occupational health. It may even show a way towards a real and lasting peace. This may be an uphill task for countries like India with special handicaps to face. Yet the fact remains that as things are today it is a *must*.

Judged by her output of manufactured goods, India ranks among the 10 leading countries of the world, and since she has gained independence her industries are fast expanding. The very survival of the country demands it. But the productivity of the Indian worker compares unfavourably with that of his western brother, not because he is an inferior human being, but because he is a victim of adverse circumstances. The industrial revolution started with a bang of astounding material gains. This blinded its sponsors to the deep-seated capacity of the mass production technique to trample on human values. Because of this the human resource, so necessary for the smooth working of the growing man-machine system, began to fail. To counter this pioneers among doctors, engineers and scientists of highly industrialised countries of the West developed the science of industrial medicine. Today this practice is standard in Europe and America, but in India, which needs it more because of further handicaps arising out of her under-development, people are blissfully unaware even of its main principles, and that despite the fact that these are not foreign to the ancient culture of the country. The tragedy is that they are a forgotten factor.

Yet it is not a matter of just copying the West. Kert Weil, a recognised specialist in industrial development, is right in saying "American know-how and scientific methods often can harm, rather than help, under-developed areas." He further says, "that most of the technically

backward countries have old, high cultures. It would be folly to destroy them by trying to convert these civilizations into a poor replica of life in America."

A case in support of Weil's opinion is the different hygienic ways of drinking water. The West has devised an excellent way of preventing infection through common drinking vessels by using paper cups to be used once and thrown away. But hardly an Indian industry can afford such a luxury. India, however, from days of old has developed methods which are safe and sanitary, and they suit her economic condition better. The masses of India are accustomed to use the flexed palm of the hand as a cup after first washing their hands. Or they use a metal vessel, known as "Lota," which is so shaped that one can drink from it without touching it with one's lips. Such naturally good and hygienic habits should be encouraged and developed instead of merely copying foreign ideas which are unsuitable to Indian ways, conditions and finances.

Schemes of recreation are necessary to occupy the worker's leisure profitably. Here too care has to be taken to develop schemes in consonance with local traditions and available facilities. Outdoor games have to be encouraged, but Western ball games can only be enjoyed by the few who have westernized their habits through long residence in towns, and who have enough money to buy the required equipment. The Indian masses, however, have a mode of dress unsuitable for such games and hardly ever have a spare coin to invest in the required equipment. There are, however, Indian games like Hu-tu-tu and Atta-Patta which one can play wearing only a loin cloth and which require no equipment whatsoever. These games are at least as good as Western games in building up team spirit, in providing vigorous exercise of the right type and are really lively and exciting games to watch. Hu-tu-tu is gaining rapidly in popularity and is likely to become a national game in the near future.

Another type of recreation enjoyed by the Indian masses is listening to folk-lore, presented in song and dance. These entertainments are known as "Garba." Essentially for the performer, a Garba is a rhythmic drill, which stimulates lung and muscle action and which develops a graceful gait.

Recreation has a cultural side too. In the West this is developed by providing reading rooms and concerts. We find that the Indian worker prefers his "Kirtan," which is a recital of stories from ancient literature, often freely adapted with gestures to music, and his "Bhajans" which are religious songs attributed to well known saints of India.

Indian industries are somewhat handicapped and this can be overcome only in terms of Indian culture and traditions and not by importing a foreign product. These handicaps come from various directions — the climate, the employee, the employer, the State and the medical profession. The Indian summer is the main climatic handicap; those from the employee's side are migratory labour, illiteracy, malnutrition, customs and habits; those from the employer are his orthodox views of business economy which prefers money economy to health economy, apathy owing to ignorance of the scope and possibilities of an industrial health service and unwillingness to change with the changing culture of modern industry; while it is the state that is most responsible for lack of trained personnel to run an efficient industrial health service; and the medical profession is so preoccupied with curative aid that it shows little interest in preventive work.

The Indian summer can cause languor of body or mind, and add venom to problems of heat and humidity which are part and parcel of many an industrial process. But it leads to a much more serious complication regarding protective clothing. Its design as a measure of industrial safety has developed into a fine art in colder countries. However, what is thoroughly suitable there becomes unbearable in a tropical climate. The heat of the Indian summer will not permit workers to wear for more than a short while protective equipment like rubber aprons, gas masks or helmets. Protective clothing is as necessary in the tropics as in colder countries, but it has to be modified to suit local climatic conditions. Research in this direction is overdue.

Illiteracy is another handicap. Hardly 10% of industrial workers are literate. Propaganda through posters and pamphlets, which forms a very important educative part of industrial health programme abroad, has to be ruled out here because the majority of workers cannot read. So it is an uphill task to carry to the illiterate worker any sort of educative propaganda, whether for his health or for his efficiency. Even the radio has not yet reached the Indian masses. One has to fall back mostly on pictorial representations and group talks; and even these have to be set within the framework of the worker's village traditions if they are to attract his attention and to overcome his prejudices and superstitions. Interested parties, however, make more of this handicap than it deserves. Culture and literacy do not always go together. The illiterate worker, especially the fresh arrival from village who has in him the spiritual aspect of the village culture still intact, responds more cooperatively at the level of

the moral plane than his brother — the educated product of modern civilization. Two factors work upon the latter to lose touch with the culture of his land, (1) not being as much under pressure of public opinion as the villager and (2) an increasing contact with a foreign culture. New conditions demand new adaptation and he generally begins by developing a more materialistic outlook on life, which, in the aggregate, leads him to offer less cooperation and gather more discontents.

It is, however, malnutrition that is the most serious handicap. The Indian worker is a much maligned creature. Armchair critics brand him as lazy and irresponsible, dirty and apathetic, and unwilling to absorb new ideas. Medical examinations of about 13,765 workers, made in the author's department, revealed that 35.3% were underweight even according to Indian standards and 16.9% showed signs and symptoms of nutritional diseases. Malnutrition is the main cause of his underdevelopment, low working capacity and apathy. To remove malnutrition is not, however, a simple matter of asking workers to include protective foods in their diet. Some have religious scruples against eating flesh and many are too poor to buy it. One must therefore fall back on nutritive and easily procurable substances ordinarily used by Indian masses like wholemeal wheat flour, unpolished or parboiled rice, germinated pulses, groundnuts, milk powder and leafy vegetables. One must also keep a watch that such cheap protective foods do not lose their nutritive value through bad storage or wrong cooking.

Further, malnutrition and poverty are cause and effect of each other. And if uncleanliness appears as second nature of a major part of Indian masses it is because of these two spectres of dirt and disease. But by instinct man is a clean animal. It is the author's experience that this instinct asserts itself if these same people are given clean and adequate facilities and human treatment without any discrimination. Like the Indian worker, however, good many Indian managements have to wade through economic difficulties. It is difficult to convince such managements that the best is the cheapest in the long run, that aesthetics is a practical proposition of money value to modern industry, that "sanitation made pleasant and easy is sanitation made prevalent."

The Indian has some customs and habits that are peculiar to him, and they need understanding and not condemnation simply because they do not meet the standards of modern civilisation, which is to him a foreign culture. For instance, for a good part of his waking day he keeps chewing betel leaves and chunam (slaked lime). The origin of this habit may be the body need for vitamins and calcium when other and more costly sources of these essential nutrients are beyond his purse. But when he overdoes it, and especially when he adds tobacco to the mouthful, which he often does, it leads to indiscriminate spitting. This leads to no particular insanitation in the open fields of his village and that is why he finds it difficult to understand why people resent it so much when he does the same thing in factory surroundings. But management is not in a position to point a finger at, still less penalise, its labour for such lapses, for it itself shows some failings, and its response, when they are pointed out, is as sluggish as that of its labour. If the employee's thoughtless habits can defile the factory environment, management's wrong thinking can upset people's emotions, and of the two the latter is by far a more serious handicap to the progress of industry. Both need active and continuous educative propaganda, and both ultimately respond favourably to them, if such propaganda give due recognition to human values of self-importance, self-expression and so on. This brings us to the handicaps from the side of the employer and how to meet them.

Only a couple of decades ago the general run of Indian managements was following the nineteenth century concept of labour as a commodity. They believed that business is business, where sentiments can have no play, and that health and safety were each employee's personal responsibility. But with changing times they had to change this view, and the next phase in their evolution towards the modern idea of business management was to consider safety and health as a fringe benefit which may be supplied to employees if finances permit. A good many employers began giving curative medical aid to their employees. A few among them, especially owners of large concerns, did so as a humanitarian gesture worth making, and did the genuine thing; but most others merely put up a pretence — and that only for first-aid — as a sop to public opinion growing critical, or because labour laws demand it. They looked upon it, and some of them do so even today, as an unavoidable evil and an ill-advised burden on their finances critically needed for production purposes, and many times they soften the blow by creating a sinecure post in service of nepotism. Here and there, however, a progressive employer did sense that preventive medical aid may prove a constructive welfare service of benefit to industry, and he started pioneering in industrial medicine. But even such a one, because of his previous one-sided training, largely directed towards the economic and technical aspects of his

work, finds it difficult to accept industrial medicine as an organisational necessity of modern industry, requiring as much of his active support as finance, accounts, sales, purchases and so on. He needs as much, and perhaps more, training to understand the baffling vagaries of human nature as the miraculous possibilities of technology. He needs convincing that he may have to go out of business unless he does all that modern science of man makes possible for developing his manpower so that it can give of its best. Technology is his pet child, but fortunately for him technology itself — its implications and complications — brings out this need clearly, and is leading him to start training schemes in business management which no longer show any resemblance at all to the old conception of management — hiring, bossing and firing.

Technology is a rich gift that science offers to man. But it is not an unmixed good. Its impersonal approach has a vein of ruthlessness in it. Besides, its rapid progress makes the industrial structure so complex that it cannot be run smoothly without special training in business management, and very recently a number of such courses have started in the country. What is hopeful is that sponsors of quite a few of these courses are beginning to realise that management is increasingly becoming a matter of handling people and not processing things, and so they desire to include in the course the subject of health — especially mental health — and safety as a managerial function and responsibility. But there is a great dearth of trained personnel who can take up such work. Probable causes of this dearth may be apathy of the Indian medical profession and inexperience of the government of a newly-made independent country.

The main cause of the apathy of the profession may be that it is yet so far away from satisfying the whole need of the country for curative aid that it has no time to devote to preventive medicine. Moreover, circumstances have conspired to create a tradition in the mind of both the general public and the profession that factory medical aid cannot be, and is not expected to be, much more than first aid. Until a decade or so ago it was a common belief that only second rate doctors accept a factory post unless he be a nephew or son-in-law of the owner struggling for an economic footing.

In 1948 the author attended the annual gathering of the Indian Medical Association to present a paper on industrial medicine. The morning on which he was to do so started with a symposium on appendicitis, and the hall was chock full of doctors. Then followed a paper from a public health doctor and his audience hardly numbered 50. Then came the author and the number dwindled to round about 20. A few left soon after he started. To rescue the remaining and himself from a trying situation he closed the paper well within the allotted time.

Today, 10 years after this event, it cannot be said that the interest in industrial medicine of the profession as a whole has increased substantially, despite the fact that the progress of medical knowledge in general has been miraculous. It is some years now since doctors employed in factories have started a Society for the Study of Industrial Medicine, with several branches in the country, but they are plowing a lonely furrow, mainly perhaps because a large majority of them are not practising industrial medicine proper, but are only giving curative first aid. Recently, chairs for preventive medicine were being established in teaching hospitals, but what importance they will give to industrial medicine is still an unknown quantity. Teachers of general medical subjects like medicine, surgery and so on are in a position to advance knowledge of occupational health, but few among them care to expose the occupational facet which most diseases have. In India both the teaching and practice of industrial medicine are far from what is needed.

Having failed with the profession, the author tried his luck with government officials connected with labour welfare, and they were somewhat more responsive. Partly because of this, in 1950 the All-India Board of Technical Studies in Chemical Engineering and Chemical Technology set up a committee to prepare a scheme of training in industrial safety engineering and industrial hygiene with reference to chemical industry, and the author was nominated as one of the members of this committee. He submitted for consideration by its members a background paper on "Training in Industrial Safety Engineering and Industrial Hygiene." This committee met early in 1952 and made recommendations, but so far none of them has materialised, not because government was losing its interest in advancing industrial medicine, but because of lack in the country of the technical know-how and trained personnel. They kept seeking foreign aid, and during the last decade more than one team of industrial hygienists from U.S.A. visited India to help and guide the Chief Adviser of Factories, Ministry of Labour and Employment to advance his work of improving working conditions in Indian factories.

What is helping more, however, is the unflagging interest of the International Labour Organisation and the World Health Organisation in advancing industrial health among the

underdeveloped countries. During the last five years, four eminent industrial physicians from Europe have visited India as (WHO) Consultants to study the problems of industrial health in Southeast Asian countries and suggest remedies. As a result of this there was a joint ILO/WHO Conference in Calcutta from November 24 to December 6, 1958. Its agenda included most problems that affect the needs of India. Much, however, will depend on what action government will take on the recommendations of the conference.

A difficulty that comes from the government side arises out of virtue overdone. It is pledged to the laudable idea of a welfare state and it is in a hurry. When its enthusiasm does not take count of its inexperience it unconsciously takes the course of least resistance — a plethora of labour laws. In the history of mankind one does not come across any case where any government in any part of the world has succeeded in establishing the welfare of its people mainly through legislation. Law rules through the logic of reason, but man is a sentient being whose life is swayed by the logic of feelings, and he can see and respect reason only through his emotions. The country needs more of mental hygiene and less of legislation. The objective of mental hygiene is, and has to be, self-help for self-growth. That is why it is a hopeful sign that it was the then health minister of the State of Bombay who two years ago mooted the idea of starting a nonofficial Council of Industrial Health, Hygiene and Safety consisting of representatives of employers. Another hopeful sign is that, though up to date, the council has not done anything worth noting, a good many employers are interested in developing it.

Yet another hope comes from the awakening visible throughout the Southeast Asian Region. The Second Southeast Asian Conference on Occupational Health was held in Calcutta from November 14 to 23, 1958.

Finally, to take a bird's eye view of industrial medicine in India, one sees that, despite handicaps, despite prejudices, things are moving, slowly, perhaps, but surely. They must move, for the man-machine system has come to stay, and wherever there is man medicine has to follow. If the speed of this movement is to be increased (and the need is there), and if the movement itself is to be made stable, a correct answer is necessary to the question — who is supreme, man or machine? This is the main battlecry behind most labour-management disputes. But what can bring peace and prosperity in industry is man and machine knitted in a harmonious unit for mutual benefit. Industrial medicine claims to be the ferment that can bring about such unity, and its successful though checkered career in industries of the West is proof thereof. In India, industrial medicine is still floating as an idea, but it seems its seed is about to fall on virgin soil, and if proper use is made of past mistakes of the West, and inspiration is sought from virtues inherent in the ancient culture of the land, there is hope that the seed may take deep roots.

Merry Christmas

Employers have been urged to dry up the Christmas office party by the National Safety Council, which blames the flowing bowl at the office party for getting the Christmas traffic toll off to a dizzy, dangerous start.

"Our surveys," said the Council, "show that a sizeable percentage of Christmas traffic accidents occur in the early hours of the holiday period. Many of these can be traced back to the office party and its highball hilarity."

The Council emphasized it is not trying to dampen the traditional Christmas spirit. "Just the opposite," it asserted. "We are trying to eliminate a definite source of highway accidents — accidents which can completely ruin Christmas for anyone they touch. You just can't have a merry Christmas if someone you love is hurt or killed."

The Council is asking its 8,000 business and industrial member concerns to take a new look at their office parties and either keep the cork in the bottle or eliminate the parties.

It also is enlisting the support of churches of every faith and creed in a united effort to keep the threat of drinking drivers to a minimum over the Christmas holiday season. "Drinking and driving," it said, "are a lethal combination — not only at Christmas parties, but any time, anywhere. And it is especially and tragically ironic to celebrate Christmas — a holiday dedicated to 'Peace on Earth, Good Will Toward Men' — by turning people loose on the public highway in a condition to injure or destroy their fellow men. The most dangerous drink ever concocted is 'one for the road.'"

Best attainable palatability is an essential feature of medically prescribed diets. Among the dietary items which relieve monotony and provide a psychological lift is beer, which can be appropriately included in a variety of diets.

MALT BEVERAGES

as

Supplements

to

Medically Approved Diets

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Modern dietetic science and art are able to do wonders in making restricted diets attractive. These expertly contrived menus are not limited to the big hospital diet kitchen, as the menus are available to everyone who may be interested. The nurse or dietitian will not ordinarily include in these diets any beverage containing even a low percentage of alcohol without the specific instruction or, at least approval, of the attending physician. Thus this little refinement in dietitics is often worth the attendant's consideration, particularly in the management of geriatric patients.

Beer is commonly thought of as a beverage of gaiety, a drink associated with festive occasions, a form of liquid refreshment habitually enjoyed by people who live well. Such connotations give most persons a psychological stimulus of positive, pleasurable character; and this offers a very cogent reason for permitting dieters a glass, or even a bottle, of beer if they enjoy it and if it can be properly included in the diet. But is beer really suitable for inclusion in restricted diets?

First, what is a diet? And why is a diet prescribed? At the risk of merely repeating the obvious, let us restate some fundamentals. Surely physicians do not prescribe diets because they think gustatory pleasure is a sin, or to build up the patient's strength of character by habitual self-denial. In medical parlance a "diet" is a plan of eating and drinking intended to supply certain foods or nutritional elements in amounts adequate to the body's needs. Prescribed in the attempt to restore or maintain health, it is frequently intended also to avoid or limit the ingestion of certain foods or food ingredients (or metabolic elements) for definite medical reasons.

For example, in underweight patients, the prescribed diet is planned to supply adequate amounts of all essential food elements and also to supply wholesome foods in amounts that will bring the level of calory intake definitely above the level of calory consumption. On the other hand, in reducing diets, the number of calories represented in the diet is planned to be less than the number of calories consumed, but at the same time the amounts of essential food elements are kept high enough to meet the body's requirements. Other examples of medically prescribed diets are those especially planned for patients having certain diseases, such as peptic ulcer, ulcerative colitis, gout, anemia,

celiac disease — or for patients who have undergone gastric surgery, colostomy, ileostomy or bowel resection.

Not only for geriatric patients, but in all cases, it would seem that the therapeutic or hygienic diet should depart from the average unrestricted diet only so far as to accomplish certain definite objectives. Naturally an effort is made to avoid monotony and unpalatability, not only to spare the patient all avoidable unhappiness, but also to ensure his continued observance of the regimen prescribed. Therefore, the prescriber usually includes as many and as varied foods and drinks as possible without violating the principles and objectives involved.

Unless a diet is acceptable to the patient for whom it is prescribed, it is not a practical diet. This is not to say that all patients are cooperative, or to deny that some would never find any beneficial diet acceptable. But, no matter how perfectly a diet fulfills the pathologic or metabolic conditions to be met it cannot accomplish any good until it is being followed by the patient. Thus we naturally want to work out a solution for the problem confronting us.

In trying to make a diet attractive it is frequently necessary to include in judicious amounts certain items, which are not commonly regarded as articles eaten by persons on dietary restriction. Perhaps this is somewhat comparable to the indulgence in an occasional purchase which is rather extravagant but not of such magnitude as to seriously disturb the economic balance of a provident person.

Because of the palatability of beer, its mild alcoholic action and the feeling of enjoyment, both physical and mental, which it gives most people, it has a special value in the many diets in which it may be included. Let us see what beer contains. Inspection of Table I reveals that the average American beer is over 90% water, about 3.5% alcohol, a little carbon dioxide, and over 4% "extract." The "extract" is largely carbohydrate, a little protein and still less "ash." The "ash" is made up of minerals but all in small amounts. From this statement of composition it can be seen that, taken in judicious amounts (eight to 12 ounces at a meal or possibly 24 ounces in a day) beer does not appear to supply an excessive amount of any of its ingredients. Obviously, the amount of alcohol represented is not intoxicating. In fact, such an eminent authority, as Dr. Leon Greenberg, Director, Laboratory of Applied Biodynamics, Yale University, does not regard beer (as normally consumed) as an intoxicating beverage.[1]

It seems obvious that beer can well be offered to patients on a "general" or "full" diet which, as phrased in the Mayo Clinic Diet Manual,[2] is "a well-balanced diet, planned to teach patients good nutrition by example." Diets designated as light, soft, full liquid and clear liquid also include carbonated beverages. Thus, when pleasing to the patient, and not contraindicated for some special reason, beer is a logical dietary item.

Carbonated beverages are included in diets prescribed for diseases of the gall bladder, diseases of the liver, irritable bowel, chronic ulcerative colitis, sprue, allergy, gout and iron deficiency anemia, as well as following colostomy, ileostomy, bowel resection, operations on the lower intestinal tract, on the colon and vaginal hysterectomy.

Exclusion of beer from a low sodium diet may be the result of a wrong impression of its sodium content.[3] Development of flame photometry has reduced determination of sodium content to a matter of minutes.[4] The surprisingly low-sodium content of the average American beer (7 mg/100 Gm.) makes beer acceptable on most low-sodium diets. An eight ounce glass of beer will usually supply only about 16 mg of sodium, actually less than is frequently found in an equal quantity of drinking water. It may be of interest to compare the sodium content of beer with that of various foods and beverages, as shown in Table II.

The utilization of beer in low-sodium diets has been studied and reported by several investigators, Olmstead, Cassidy and Murphy[5] first restricted fluids to 2,000 cc per day, after which these patients were placed on a 250- or 500-mg sodium diet in which one fourth of the calories was supplied by beer (2.5 mg of sodium per 100 cc). Similar studies were made during a five or 10 day period in which the patients

TABLE I.
THE FOLLOWING ANALYTICAL DATA REPRESENT A COMPOSITE SAMPLE OF A NUMBER OF LEADING AMERICAN BEERS[8]

	Percent by Weight*
Water	91.61
Carbon Dioxide	0.49
Alcohol	3.53
Extract	4.40
Total	100.00
The extract consists of the following:	
Carbohydrate	3.86
Protein	0.34
Ash	0.20
Total	4.40
The ash consists of the following:	Percent
Potassium as K_2O	11.12
Calcium as CaO	3.64
Magnesium as MgO	7.18
Sodium as Na_2O	12.42
Phosphorous as P_2O_5	37.82
Chloride as Cl	8.95
Sulfates as SO_3	10.98
Silica as $Si\ O_2$	7.89

*Brought up to date September, 1958.

TABLE II.
SODIUM CONTENT OF VARIOUS FOODS AND BEVERAGES (EDIBLE PORTION) AS DETERMINED BY FLAME PHOTOMETRY[9,10]

	Mg/100 Gm	Average serving	Mg/average serving
BEVERAGES		fl. oz.	
Beer	6.8	8	16
Carbonated water A	1.0	8	2.4
B	18	8	43
Cola A	1.0	8	2.4
B	5.0	8	12
C	15	8	36
Ginger ale	8.0	8	19
Lemon-lime soda	7.0	8	17
Milk, whole	50	8	120
MEAT and FISH		avoir. oz.	
Beef, lean, raw	51	5	72
Pork, lean	58	5	82
Fish, cod	60	5	85
FRUITS and VEGETABLES			
Apple, less skin and core	0.3	3	0.3
Beans, green, fresh	0.9	3	0.8
Celery	110	3	94
Lettuce, head	12	3	10
Potatoes, raw	0.8	3	0.7
CEREAL and CEREAL PRODUCTS			
Corn flakes	660	1	187
Bread, white, enriched	640	2	363
Crackers, graham	710	2	403
Rice, polished	2.0	1	0.6
MISCELLANEOUS			
Cheese, cottage	290	2	160
Chocolate, unsweetened	4.0	1	1.1
Egg, 1 medium	81		44
Mayonnaise	590	0.5	84

were on a diet including beer. Measurements of urinary output and appropriate laboratory determinations were made. The diet including beer was well tolerated and the patients considered it more palatable than the regular hospital low sodium diet. These authors report that in patients with chronic nephritis, with or without the nephrotic syndrome, the addition of beer to the low salt diet showed no evidence of any increased deterioration in the nephritic process. They found no change in kidney function in two patients with malignant hypertension by the use of beer.

Administration of 1,536 cc of beer per day to a patient with chronic glomerulonephritis for one year showed no untoward effect on the expected course of the disease, renal function showed no changes. It was the authors' conclusion that, because of increased palatability of the diet, beer may be used advantageously in the low salt diet for treatment of kidney disease. They point out that in an 1,800 calory diet with 250 or 500 mg of sodium, one-fourth to one-third of the calories can be provided with as little as 45 mg of sodium. Whittaker[6] calls attention to a specific regimen in cardiac failure in which beer is substituted for water in conjunction with a low salt diet. Two bottles of beer replaced equivalent volumes of water in a total fluid intake of 1,500 cc. Appetite was improved and patients welcomed the change.

Olmstead et al.,[7] in discussing the nutritional value of beer with reference to the low salt diet, compares the average sodium content of 6.95 mg per 100 gm of beer with drinking water containing 10 mg per 100 cc used in the low salt diet. His study indicated that inclusion of beer provided more accurate salt restriction.

In low residue diets prescribed for irritable bowel or anticonstipation diets beer can be included, and provides a welcome note of variety. Since an eight ounce glass of beer contains only 20 mg of calcium, such an item is not contraindicated in a low calcium diet. Likewise it may be permitted for persons following a diet for hyperlipoidemia, a low fat, low cholesterol diet. Obviously it need not be excluded from an iron deficiency anemia diet, or from a high bulk (regularity) diet, a high protein diet or a geriatric diet. Other well known examples of diets which can include beer are low purine, low calory, high vitamin-high mineral and the diabetic diet.

For obvious reasons the diabetic patient must have his diet planned with sound knowledge and with accuracy. However, the features of palatability and satisfaction are particularly important to the diabetic because of the long periods that he must usually follow the prescribed patterns. Most clinicians prefer that the diabetic refrain from drinking any hard liquor, partly because such indulgence may lead to departure from almost all of his dietary restrictions. However, a glass or bottle of beer taken with food can not be expected to remove anyone's inhibitions. Moreover, the little alcohol contained in beer is not generally regarded as a carbohydrate, and it need not be counted as such in calculating the amount of carbohydrate supplied by the diet. For diet calculations it is sufficient to assume that an eight ounce glass of beer supplies 9.4 gm of carbohydrate, 0.8 gm of protein, and 104 calories.

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MANPOWER

An Introduction

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That question, Where is the manpower to come from? raises further questions such as, How much of what kind of manpower is needed? Against what other activities does this one compete? Would its success create manpower problems elsewhere that are even more serious for society in general? The answers to questions such as these are not immediately at hand. But it should be possible to lay out a logical course of study to provide the information we need, and by one means or another get the study accomplished.

There is an assumption here that we can do something about the occupational health manpower problem once we know its nature and magnitude. I think this is a reasonable assumption. There are effective ways of influencing the supply of specialists in a free society. Indeed, we have developed a considerable experience in the application of some of these. They consist, essentially, of establishing training centers, providing fellowships and scholarships for qualified students, and establishing an attractive income level for a capable performer. Where a real need can be established, the training and development programs in one way or another derive suitable support — usually at first from voluntary agencies and foundations, and later from official agencies.

A superficial way of defining the nature and size of the occupational health manpower problem — and one to be avoided if the final definition is to be taken seriously — is simply to use the table of organization of some arbitrarily chosen industrial health service as a base and multiply it by some factor that will provide equivalent services to all industrial employees.

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A really fundamental approach to the problem requires that we proceed in an orderly way to discover the objectives of occupational health programs, and then to estimate the kinds and numbers of professionals needed to achieve the objectives. We now require a census of the persons currently available and an estimation of the present rate of producing their replacements. When needs are matched against resources, our shortages can be defined in accurate terms. If the needs actually are found to exceed our resources we must take a serious second look at the shortages revealed. We then must honestly try to discover what it is we can do without, and what substitutions can be made with safety.

This whole exercise must start with the acceptance of certain definitions. In the first place we are talking about health problems of people who work in industry. For our purposes industry is defined as an enterprise characterized by employer-employee relationships, and is exclusive of agricultural and domestic pursuits. In the second place we are talking about health problems that have some relationship to the circumstances of employment.

There exist three types of relationships between health and the circumstance of employment. Some factor of work or the work environment may be the cause of disability; these same factors may aggravate pre-existing disability; or, as we are just beginning to appreciate, the circumstances of employment may actually have a beneficial effect upon the level of health. Problems and considerations of this kind constitute the core substance of what we call occupational health. The activities related to their solution are traditionally carried on at a health department which is housed at the place of employment. A minimum objective of our panel is to discuss the manpower needs with respect to these activities.

Industrial management is being alerted to a broader look at the health problems of the work force. This development results from the circumstance that workers, through their unions, have bargained for and gained prepayment plans to meet the costs of medical care, hospital service and nonoccupational disability. These plans originally were paid for by employees, management contributing administrative services. With the passage of time the premium cost has progressively shifted to the employer; so that today, whether or not he has wished it, the industrial manager is in the business of general medical care. The appropriateness of including the manpower problems related to this new development in the context of a discussion of occupational health is in my mind debatable.

Occupational Health NURSING Manpower

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The man — and woman — power needed to provide the services for the health of the people who work, poses a problem that must be met. In order to determine how many and what types will be needed, we must define what we mean by an occupational health program. Only then can we determine what kinds and how many professional nurses will be needed.

Health is the key word. We are concerned with providing services to help workers to want to protect and promote their own health. Under our present system of workmen's compensation laws, few workers lack access to some form of first aid when they are injured while doing their job. However, over two-thirds of the American work force do not have access to a constructive health program that aims to help them to use wisely the services of the occupational health department, their family doctor and community health and welfare agencies.

The constructive aspect of an occupational health program makes possible early detection of disease, referral, follow-up, health supervision, health counseling and health and safety education. These are best done by an interested professional person who knows the worker and the industry, someone who understands the needs of each and who is trusted by the worker, to help him to do what is best for him and his family. When a professional staff is available to workers for the constructive aspect they also receive a higher grade of first aid care. It is then possible for a comprehensive treatment program to be carried on that assures better care for workers with minor occupational injuries and for a follow-up and rehabilitation program for those with more serious occupational injuries.

The experience of the industries, chiefly manufacturing, with occupational health services, gives us an indication of how to provide health programs for workers. Nursing manpower needs should be considered in light of the fact that nurses make up the largest single group of professional personnel in the occupational health field.

In all types of health programs much of the direct care is given by the nurse. The 1957 census indicates that 16,223 R.N.'s were employed full time in occupational health.[1] The large establishment with many thousands of workers usually has a full time health department with a medical director and a full complement of staff; physicians, nurses, engineers and allied personnel.

Approximately one-half of the occupational health nursing positions are in establishments that employ either one or two nurses with the majority of these as one-nurse units. These nurses are employed as the only full-time health department personnel. They work with physicians who serve on a part-time basis. A smaller number are members of the staff of cooperative programs where two, three or more industries use one occupational health department. Other industries join together to employ the services of a physician who gives medical direction to

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the nurses. Each industry has its own nurse, who may be full-time or part-time depending on the size of the units. The use of part-time nurses in industry takes three forms: the nurse who serves two or more industries at one time, or who serves one but works less than 40 hours per week. One of the most successful forms of part-time nursing is that provided by visiting nurse agencies in some of our heavily industrialized communities who contract with industries for so many hours per week of nursing time and one of the public health agency staff nurses reports on a regular schedule to the industry and for that number of hours becomes the industry's nurse.

There are two rules that will help us to estimate future occupational health nursing needs. The first suggests one occupational health nurse for the first 500 workers and the addition of one nurse for each additional 1,000 workers. The second estimation is based on six hours of nursing time per week for each 100 workers in those establishments that employ less than 500 workers. Using these and a labor force of 33 million workers in two million plus establishments, we find that approximately 40,000 additional nurses are needed if all the workers in organized establishments are to have access to the constructive and curative services of an occupational health program.

Table 1 seems to be the picture:

TABLE I.
NUMBER OF INDUSTRIAL ESTABLISHMENTS BY SIZE, NUMBER OF WORKERS AND NURSES EMPLOYED AND ESTIMATE OF NUMBER OF NURSES NEEDED[2]

Size of Establishment	Estimate of Establishment in Thousands[2]	Estimate No. of Workers in Thousands[2]	Estimate of R.N.'s Employed in Thousands	Estimate of No. of Additional R.N.'s Needed in Thousands
0- 19 workers	2,665	10,922	0	16
20-100 workers	223	10,251	0	15.5
100-499 workers	43	8,601	7	8.5
500-more workers	8	4,203	10	—

This is a conservative estimate of needs. It is not a goal that will be attained easily. Even if we had 40,000 nurses looking for positions, could we use them wisely and well? What is needed is the point of view that the health needs of the American adult are important, and that much benefit will accrue to him, his family, his employer and his community if he has access to a constructive health program. In-plant health programs were started because workmen's compensation legislation made it good business to have a professional staff on duty in large industries to give care to workers with occupational injuries. This was true of large industries because they could use the services of full-time health service personnel and thereby operate efficiently.

Although first aid, emergency care and follow-up care for workers injured on the job were primary considerations, a broader practice of occupational health developed. Nurses found themselves concerned with total health. It is only a broad constructive health program that would call for 40,000 additional nurses. The employer of 15 or 20 people is likely to say that a part time program is as good as no program, that the nurse won't be here when someone gets hurt, so what good is she? The answer is little, if all she does is to give first aid care. But a constructive and preventive service will take a minimum of six hours nursing time per 100 employees per week. Thus, even 15 people would need about an hour of nursing time per week. A central clinic or dispensary in a trailer are practical approaches. They make possible the essential medical direction as well as the nursing services.

Expansion of the use of nurses on a part-time basis for small industries will occur more readily in the establishments with 100 to 499 workers. These nurses will need medical direction, but they will work alone much of the time. When they are in the plant, they will give first aid care to workers but supervision of the first aider will be a more important activity. Their direct care of the worker will include counseling, teaching, referring and preventive activities such as tetanus toxoid inoculations and follow-up care for workers with minor occupational health problems. It is likely that the need for about 8,500 additional nurses for the establishment with 100 to 499 employees is one that should be considered an immediate need. The 32,000 nurses needed for the smaller establishments should be taken into consideration in planning for the future. Perhaps by the time they are educated we may be able to use them. At this time there is a need—but little or no demand and almost no supply.

The occupational health nurse census does not indicate how many occupational health nursing administrative positions there are. We know that there are less than 80 occupational health nursing consultants and only one full time occupational health nursing educator. One need that must be met is for more and better occupational health nursing service administrators. This will make for better utilization of nurse power.

The occupational health nursing consultant is a key person to whom the nurse in a one nurse unit, full or part-time can turn for help with evaluation and development of her program and

with nursing problems. No one person influences occupational health nursing service as much as does the occupational health nursing consultant. The 77 who are working in this area are employed by official agencies and by insurance companies. There is only one employed by a visiting nurse association. There is a crying need for many more and if we hope to provide health programs for workers in small industries we must have many more occupational health nursing consultants.

The need for more teaching and more teachers of occupational health nursing is the one that must be met first.

The needs for occupational health nurse educators are threefold: first, to help students in schools of nursing to learn basic occupational health nursing understandings; second, as educational directors and consultants who will plan and carry on a continuing inservice education program for nurses employed as full and part-time occupational health nurses; third, as educators prepared to teach advance degree programs similar to the ones now in operation in a department of public health, for those who wish additional preparation for administration, consultant and teacher positions.

This Forum asks: what needs to be done? My answer is, accept the need for occupational health services for all workers. The second question is: where will the manpower come from? The source of occupational health nurses as well as of all other nurses is and will continue to be the schools of nursing in our universities, colleges, hospitals and junior colleges. At present, if we were to try to employ 40,000 additional occupational health nurses or even 10,000, we would have to draw upon an already overburdened supply of nurses.

The National League for Nursing's Committee on the Future studied nursing service and nursing education patterns in order to forecast society's need for nursing care. Tables II and III present the picture as it is today.

TABLE II.
TYPES OF POSITIONS AND PERCENT OF NURSES IN EACH[3]

	Under Supervision	Direct Own and Other's Activities	Administrative, Consultant, Educator
All Nursing	67	20	13
Occupational Health	49	50	1

TABLE III.
EDUCATION PREPARATION OF NURSES[4] AND PERCENT WITH EACH

	Diploma	B.S.	M.S.
All Nursing	91.5	7.	1.5
Public Health	69.8	25.4	4.8
Occupational Health	94.7	4.7	.6

Education facilities are already used almost to the maximum. There are approximately 1,000 diploma schools, about 180 baccalaureate degree and about 35 master's degree programs. Fifty-five of the collegiate basic nursing programs also include public health nursing preparation. Almost all of the collegiate basic schools are making plans to include public health preparation, only one or two include occupational health nursing experience for their basic degree students and none of these schools employ an occupational health nursing educator. If society is going to need an additional supply of occupational health nurses, additional educational resources must be developed. These must include in the present and future nursing schools occupational health faculty, field practice areas and on-going research. This should begin soon if we hope to have a supply of nurses ready to meet the challenge of occupational health nursing.

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Civil War between Rich and Poor

Surprising responses by 400 permanently dislocated Detroit workers resulted from a University of Michigan study asking, "If a bad depression were to happen, what do you think would happen in this country?" Of those interviewed, 17% expect a "revolution" would follow a severe economic setback. Of the 400 respondents, four out of five were Negro blue-collar workers, most of whom were unemployed or part-time workers.

Sample responses to the study: "First there'd be killing, then all kinds of violence," and "There'd be a civil war between the rich and poor."

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The Problem of Occupational Health MANPOWER

I feel that I represent the laboring men and women. Most of my experience along the line of occupational medicine has been with the labor health plans established by the union employees through collective bargaining. We know that over 90% of the loss of time in industry is due to sickness and accidents which have their origin outside the working environment.

The earliest of these plans had their beginning in the mining, lumbering, construction and railroading industry and were set up by management to provide personal medical care to employees and dependents, as well as some duties which come under the heading of an occupational health program. They were necessary because of the isolation of the workmen from medical facilities in the early days.

According to a number of reports that have been made, such as The President's Economic Report for 1956 and 1957, the studies of the Rockefeller Brothers Fund published in 1958 and the report of the Secretary of Health, Education and Welfare's Consultants on Medical Research and Education in 1958, we can expect that in the next 11 years we will have an increase in population between 26% and 34%, 220 to 235 million. The present and predicted output of American medical schools with the addition of the two four-year medical schools being developed, would only increase our supply of physicians from the present 230,000 to 273,000, or a gain of only 19%.

I do not know how many physicians we need for the job we would like to see done in occupational medicine. In a recent article by Robert A. Kehoe, M.D. of Cincinnati, he estimates that if the pattern set by our most effective industrial organization in protecting the health of their workers is to be followed by only those obviously hazardous industries, we would need 10 physicians for every one now employed full time in industry. Based on the estimated 5,000 full time physicians in occupational medicine, this would take almost one-fourth of the physicians of the country. Add to this the ones necessary to staff the various labor health plans around the country and it adds up to figure which is obviously unobtainable.

One thing that can be done is to have better training of our next generation of medical men along the lines of occupational medicine so that they will be more capable of dealing effectively with the problems of industry to which they will give part time. After all, over 75% of our industrial plants have 500 or less employees and it is not considered economically feasible for them to have a full time industrial physician in the plant.

It is logical that additional attention be paid to the development of auxiliary personnel such as industrial hygiene engineers who can look after many of the technical problems of creating and maintaining a safe environment in the industrial plant. With their assistance, and that of the industrial nurse, the services of the industrial physician may be held to a minimum. In order to do this, there must be a considerable increase in the number of trained industrial hygiene engineers and in industrial nurses.

Those of us close to the problem can see the need; to convert this need to a demand is another problem. Until we do develop this demand within industry we will not find very many of our best physicians selecting occupational medicine as their life's work.

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Industry's Need and

Utilization of Health Personnel

and Its Role in Their Further Education and Training

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In a competitive, free enterprise economy, industry's need for health personnel tends to be governed by three main considerations: (1) its need for assuring that employee health is adequate to the needs of optimum productivity, (2) its need to control expense occasioned by employee disability and (3) its need to demonstrate to employees and the community that it has a proper concern for the health and safety of employees.

In respect to the first of these considerations, productivity, the demands of competition require that health capacities of employees be at least co-extensive with the health demands of their respective jobs. Accordingly, there is the requirement for pre-entry health evaluation and, when indicated, for postdisability and periodic health evaluation, in order that employee health capacities may be matched appropriately with job requirements. Moreover, if the needs of productivity are to be fully served, such health evaluation must consider not only optimum health capacities of individuals but, also, the likelihood for absenteeism which may be present in health status. Clearly, the need for effective judgments in these areas imposes a need for the physician by industry and with him a need for necessary support personnel. As for the second consideration — the need to control expense occasioned by employee disability — there are two parts: (1) the control of work-related disability and (2) the control of employee nonoccupational disability. The first of these parts sets up needs for safety in matching employee health capacities with job requirements, for controlling exposures in the occupational environment which are hazardous to employee health and for the effective care of such occupational disabilities as arise. The second part calls for the exercise of a wide range of preventive medical activities.

Of the three types of control for work-related disabilities, the first, dealing with the safe matching of employee health capacities and job requirements, imposes no additional need for health personnel since the health determinations necessary for this action are coincident with those obtained for the productivity consideration. However, the need for controlling health hazards in the occupational environment and the need to care for occupational disability both add to industry's need for health personnel. And for the preventive measures necessary to control the expense of nonoccupational disability there is still further need for health manpower in such activities as health education, counseling, immunization and voluntary periodic examinations.

Finally, industry's need for health personnel is conditioned by the necessity for the individual firm to compete for public and employee favor in the building of a favorable company image. With the public, such an image may be important to sales and to assuring a broad opportunity for the selection of employees. With employees, it can be an important factor in job satisfaction, productivity and working force stability. As will be indicated, the significance of these interests lies mostly with larger firms. However, in most instances they will not constitute a separate demand for health personnel since they are served simultaneously in fulfilling other demands for health personnel.

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Thus, on the qualitative side, it is seen that industry's need for health personnel consists in these elements: (1) evaluating individual health status in the selection and placement of employees, (2) controlling health hazards in the occupational environment, (3) caring for work-related disability, (4) controlling employee non-occupational disability and (5) providing employee health service to promote employee and public relations. The degree in which these elements are present varies from firm to firm and, depending upon the efficiency with which they can be satisfied, may or may not add up to an effective demand for health personnel in a particular instance.

Practically, the extent to which these five needs may be translated into industry requirements for professional health personnel is, at present, defined only by over-all estimates of industry's in-plant utilization of such personnel. From figures supplied by the National Health Council, it is estimated that the nation's maximum number of in-plant professional medical service personnel is the equivalent of 8,000 full-time physicians and 20,000 full-time nurses. In relation to our present industrial labor force of 58,000,000 these figures indicate that, at maximum, there is the equivalent of one full-time in-plant physician for each 7,250 workers and the equivalent of one full-time in-plant nurse for each 2,900 workers.

Do these ratios reflect industry's need for professional health personnel, or, on the other hand, do they indicate a serious shortage of such personnel?

Characteristically, American industry is quick to adopt techniques which improve net operating efficiency and competitive position. In fact, it is constantly on the alert for ways and means of doing just this. Therefore, if there were a net benefit in adding more health personnel in industry, there is good reason to suppose they would be present — unless, of course, such personnel were not available or there were other claims on existing funds which promised better returns.

Can it be that health personnel are not available to industry in the numbers it desires? If so, we should expect industry to be talking a good bit about a shortage. Instead, we observe that, among those who are concerned about shortages of health personnel, the voice of industry is relatively inconspicuous. From this, it is hard to escape the inference that industry today feels no great shortage of health personnel. On the available evidence, it would seem more plausible to suppose that, because of its superior bargaining power in the market for services, industry would be the last place for a shortage to occur. More likely explanations for industry's present quota on health personnel would seem to be (1) industry is not convinced that there would be a net benefit in further utilization of health personnel or (2) as may more often be the case, industry feels that at this stage there are better opportunities for investment along other lines and so does not convert its full need for health personnel into actual demand for such personnel.

As a possible measure of industry's minimum need for physicians and nurses, it may be of interest to examine known demands for work-related examinations and the care of occupational disabilities in broad segments of the automobile and electrical equipment manufacturing fields. In each of these two areas of observation, the need for medical services, excluding indirect services, voluntary examinations and the care of nonoccupational disabilities, requires an average of three to four medical department visits per employee per year. With nursing service set to cover 9,000 patient visits per nurse per year — about 35 visits per nurse per working day — the ideal number of nurses required to deal only with work-related medical visits would be one nurse for each 2,500-3,000 employees. The corresponding ratio for physicians, reflecting a demand of .5 physician visits per employee per year and a per-physician capacity of 3,500 patient visits per year — or about 14 visits per physician per working day — would be one physician for each 7,000 employees.

The fact that these ratios compare closely with the all-industry physician and nurse ratios previously cited suggests the possibility that, if evenly distributed, industry's present utilization of professional health personnel could cover industry's basic health needs. However, even in the unlikely event that such distribution could be carried out, it might be inappropriate to do so. The fact that professional in-plant health personnel in industry is distributed as it is, largely reflects the pattern of economic obligation and opportunity for employee health care among individual firms. To disrupt this pattern without changing obligations and the grouping of employee populations would increase costs both of the firms deprived of profitably employed health personnel and of firms which acquired such personnel but could not profitably employ them. In the last analysis, these costs would be paid by all society through higher consumer prices. A basic question thus arises. Is society willing to reduce its standard of living in other ways in order unprofitably to increase or rearrange professional health care in industry?

When one reflects on the pattern of opportunity for profitably employing health personnel in industry, it is not surprising that virtually

all of industry's in-plant professional health personnel are concentrated in larger firms which, together, employ only one-quarter of the nation's industrial population. By and large these are the firms with the greatest economic obligations for employee nonoccupational disability. They are also the firms with the opportunity for distributing fixed in-plant medical costs over sufficiently large numbers of employees as to make medical costs per capita tolerable. However, the concentration of in-plant health personnel in these firms does not necessarily imply an equivalent shortage of medical care in smaller firms.

Increasingly, as the size of a firm declines, it becomes more economical to utilize health services outside the plant. Thus, to assess utilization of health personnel by smaller plants it is necessary to take account of out-plant medical service. Unfortunately, there is not available sufficient data to know just what the small company situation is. Presumably, however, the largest part of the difference between small company and large company health services would exist in the small company's lesser provision for nursing care. The reason for this is, whereas nursing care may be nonexistent in the small company, it appears that an appreciable proportion of cases requiring a physician's attention do get referred to community practitioners. But in pointing to the absence of nurses in small firms, allowance must be made for the increased use of first-aiders in such firms if there is to be full assessment of industrial health care.

In considering the need for health personnel in industry, it is important to distinguish between the health needs of individuals and the need for employee health care by business. The two factors are distinctly different. For business, an effective need for employee health care exists only when there is greater net profit in supplying such care than in not supplying it. For individuals, the need may exist with any disability or discomfort, regardless of its effect on the profitability of industry. Thus, the health needs of individuals will tend to exceed those of business in every instance except that in which the economic interest of business in employee health is as great or greater than that of the employee himself. For many large firms, the assumption of ever-increasing economic obligations for employee disability and the unremitting demands of competition for productivity are combining to bring the employee health needs of business closer and closer to those of the individual. For most small businesses this is not nearly so true.

For the future, it may be expected that the need for health personnel in industry will expand. However, for the reasons previously given, it may also be expected that the expansion will be confined mostly to larger firms. Moreover, apart from serving industrial population growth, the reason for expansion will be primarily one of controlling employee nonoccupational disability rather than the control of work-related disability. Again, figures point the way.

In 1950, there were but a handful of companies which provided major medical protection for employee nonoccupational disability and paid 50% or more of the premium for such insurance. At the end of 1958, the number of such companies had risen to an estimated total of over 20,000. In addition, a number of companies included in this group have increased the proportion of their contribution for such insurance during the period in question and some have undertaken to pay the full cost. As a result of these developments and the increasing liberalization of extended pay policies for employees experiencing disability, many larger firms now have costs for employee nonoccupational disability which are over 10 times the company cost of employee occupational disability.

In contrast to the outlook for increased interest in health services by larger firms to control expanding company costs of employee nonoccupational disability, the prospect of increased utilization of health personnel to control work-related disability is relatively small. With selective job placement, advanced safety programs and safer machines holding traumatic injuries in check and with demonstrated capacity for readily solving and controlling new problems in industrial toxicology and occupational disease as they arise, the demand for additional health personnel to control employee work-related disability would appear to expand only as necessary to apply current health personnel ratios to such growth as occurs in the industrial population.

As for industry's role in the further education and training of health personnel, it seems likely that industry action will reflect the relationship between industry's demand for health personnel and the supply of such personnel available to it. With a growing demand for health personnel, there is an increased need — particularly in the larger firms where this demand is mostly concentrated — for assuring that there is available an adequate supply of health personnel. Accordingly, were industry to judge that it faced a shortage of health personnel, it is logical that through professional school donations, medical and nursing scholarships, public relations programs and other means, it would attempt to broaden supply. Also, it is likely that industry's practice of providing on-the-job training and facilities for educating health personnel would be enlarged.

Expectations of Management Regarding Occupational Health

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You can single out any one component of an enterprise, describe what it is supposed to be and what you expect from it without too much difficulty if you just stick to words. But when you get beyond the verbal level you're likely to get into trouble because all of these projects, programs, items, procedures — call them what you will — are so interrelated and interdependent that you can't segregate them physically any more than you can separate "mind and body."

We have become so "specialist" minded in a generalist environment that we tend to build within organizations huge bureaucratic elements, each an empire unto itself. We run the danger of considering job or departmental status and objectives paramount to the status and objectives of the whole organization.

An organization in industry is purposely created to produce a satisfactory product or render a useful service at a reasonable profit that will assure the survival and growth of the organization. When individual or group interests within an enterprise give undue emphasis to their status then what is supposed to be an organization becomes a coincidental confluence of semiautonomous agencies.

Each group within the organization must be able to subordinate its special interests to the interests of the whole enterprise. So if we limit ourselves to the verbal level to accomplish what we can't do in fact, we are likely to be in the position of the psychologist who says "It's all right to talk to yourself, just so you don't believe what you hear."

I'm not trying to duck the subject nor am I trying to be an iconoclast. I am trying to put the role of occupational health in perspective. If we can do that then we are well on our way toward defining our expectations. I am not going to dwell on the technical aspects of occupational health or its specific functions.

In any field of endeavor whether it be as a pickpocket, magician, accountant, mechanic, aviator, doctor, lawyer, editor or theologian a certain degree of technical knowledge and competence is a presumed condition precedent to the assumption of responsibility. Even that, however, is not always the case.

I may preface my statement of expectations with the hypothesis that an acceptable occupational health program should be supervised by a person on whom has been conferred the degree of doctor of medicine. The specific features of occupational health programs will vary widely. The experience with them will also have extreme ranges and both have been overly documented. While there is some symmetry in principle and objectives, there is wide diversity in content, techniques, procedures and reports. In all probability this is as it should be. It is doubtful that any programs of this nature should ever be rigidified by a single format. However, the many different points of view concerning the role of occupational health that have been expressed are somewhat confusing to the neophyte or layman. Not the least of these is the attempt to establish a sharp line of demarcation between the preventive and the curative.

As long as I have mentioned confusion I hope the doctors won't mind if I petition them to produce a glossary of terms to help people like me understand their language. I never got beyond dermatitis, let alone hypercholesterolemia. When I can't understand what someone is saying I tend to be apathetic or suspicious. If you will favor management with such a glossary we will try to reciprocate. I'm sure some of our business lingo, such as lifo and fifo, must be equally confusing to you. Without such aids to better understanding each of us might become like Johnny, who, when the teacher asked, "If

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I take 37 from 52 — what's the difference?" replied, "That's what I say, teacher. Who the hell cares?"

The need for a glossary of terms symbolizes what to me is management's greatest expectation or need from occupational health, a need so great that I consider it the greatest single deterrent to progress. That expectation is better understanding of the ways and means by which management and occupational health can work together more closely in meeting the needs and fulfilling the objectives of the whole enterprise.

There is an inescapable interdependence of all of the people who constitute an organization that is too often ignored in the current popular surge of "individualism" and "professional dynasties" within organizations. May I add that when I speak of people in an organization, I mean shareholders, customers, neighbors and the public as well as employees and their families.

If we have one great challenge confronting all of us in management today it is to make it possible for the individual to recognize the mutuality of his interests and those of the enterprise. This does not, and should not, suppress or submerge the individual. On the contrary it should stimulate greater participation, with the attendant rewards of pride and satisfaction derived from a sense of personal accomplishment.

To me this is the greatest challenge confronting industry today and in the years ahead. It is our biggest, our most difficult job. It involves every facet of every business.

The greatest and most valuable hidden asset in every enterprise is the latent, untapped reservoir of knowledge, experience, wisdom and skills of its people. Unfortunately it never applies as conspicuously as it should on our balance sheets and profit and loss statements. If it did I'm sure we would mobilize our efforts and energies with incredible speed to fully open and use this reservoir.

It seems to me that our greatest expectation of occupational health is that it can make a definite, discernible contribution to the solution of the problem of improving the understanding of the mutuality of interest of the individual and the enterprise.

Occupational health is an area of business where the people involved have extraordinary opportunities to help other people in the organization meet their individual needs, real or fancied. This exposure results in an impact that influences attitudes one way or another, both positively and negatively. For this reason, the doctor, who is head of the occupational health program, should be a full fledged member of management.

No member of management is more actively involved, from minute to minute, with the concern common to all men, yet different for all; their health. No member of management should be better qualified to evaluate company programs, projects and objectives in terms of their possible and probable impact upon people. No member of management should have greater opportunity to "get around," to see people, to discuss attitudes, to find out what people "really think" and assess individual needs. No member of management can be any more useful and helpful to all managers in giving them guidance and counsel on behavioral patterns and reactions. No members of management is better qualified to assist management in formulating intelligent approaches to the tremendous problems of emotional health where we haven't even scratched the surface.

Time does not permit a more comprehensive recitation of expectations in this area, but I would be more than remiss if I did not mention an expectation of management that must be met if the doctor is to fulfill this role. This expectation is that management will give increasing recognition to the important role occupational health can play far beyond the perimeters of physical health maintenance. The fulfillment of this expectation requires status for the doctor and information that can only be obtained by participation in top management problem solving councils.

Great value can be derived by both the doctor and other members of management by such participation. How much value will depend to a large extent upon the individuals involved; the doctor and the other members of management. One thing the doctor will gain is a better perspective of the factors and processes involved in decision making.

For example, I know in our own company our various medical departments would like to see substantial improvements in their facilities and space. Delay in acquiring these things cannot help but produce some kind of a negative reaction, not the least of which could be a feeling that top management was not sympathetic to their needs and the needs of the occupational health program.

But I am sure that if the doctor had participated in one of our capital expenditure planning programs where the demands for all types of buildings, tools and equipment total several times the amount of money available, he would have a better understanding of why certain items are deferred with regret but with recognition of the need for the given project.

The doctor also needs from management adequate assistance and support to permit him to spend much more time in consultation and evaluation than in sewing up fingers and dispensing pills.

If the doctor has time to travel through the plant he can learn much more about people in the places where they work, their attitudes, reactions and problems. This will enable him to do a better job of consultation on physical and environmental factors such as heat, light, ventilation, sanitation and hygienic conditions.

Management must also provide the doctor with opportunities for further study and training in his profession and in the business of business, particularly in organization concepts, structures and objectives; not to become immersed in charts and functional statements, but to help him learn more about demands of people, their needs and their opportunities.

The other side of this coin is the fact that management itself needs further study and training in occupational health.

Unfortunately all of us are so deeply immersed in day to day problems and projects that we seldom have the opportunity to broaden our perspective to the extent that we can encompass, and clearly see, our role and function in that perspective. This perspective is the crux of the problem of communications and understanding. It underlies our constant efforts to improve productivity and performance. It is an area where occupational health plays a vital role. Doctors, and others in occupational health, can be of invaluable assistance in our total communications effort, particularly in communications about problems in the whole area of the work environment, not just health and disease.

These communications should be much more than just published bulletins and articles, they should involve meetings where subjects of interest can be discussed and where an exchange of information can be of benefit to all. This is my concept of management's expectation regarding occupational health: First, we must accept the basic premise of technical and professional competence and the performance of specific tasks essential to the fulfillment of the role of whatever occupational health program a company may have.

Second, we must recognize that the doctor's first responsibility is to the individual, and there can be no encroachment upon the ethics of this relationship.

Third, once the first two conditions are satisfied, then our greatest expectation, our frontier if you will, is for those in occupational health to recognize that they are, and that they be acknowledged as an integral part of the management team charged with the responsibility for the performance of the whole enterprise.

Working together to improve organizational efficiency and effectiveness is the most essential element of survival and growth in our intensely competitive industrial economy.

This goal is going to be achieved by people; not money, machines and materials. The attainment of this goal requires the best brains, talent and knowledge we can assemble in every company. No one is surfeited with it, we all need it. The doctor can play a vital role in contributing his special knowledge, wisdom and experience to it. We in management must open the door, put out the welcome mat and give him the information he needs to play this role. He, in turn, must equip himself to counsel intelligently on all aspects of the human phases of business.

This is our challenge, our goal, our expectation. The rewards of achievement will more than justify the effort.

Water Pollution and Leptosipira Ictervhaemorrhagiae

There is no relationship between the pollution introduced into the Missouri River at St. Joseph, Missouri, and health conditions at Atchison, Kansas, Dwight Metzler, chief engineer for the Kansas board of health, reported to a recent water pollution hearing. Mr. Metzler stated the river south of St. Joseph and in the vicinity of the Atchison water intake was "grossly polluted." He said at the time of his most recent visit to the Atchison water plant that filter beds smelled more like septic tanks.

"Only the thin curtain or barrier of chlorination protects the water consumer at Atchison," he asserted.

The government's top technical witness, Harold F. Clark, bacteriologist from the U. S. public health center at Cincinnati, said the fecal coliform count in the river increased 230% between St. Joseph and Atchison. Fecal streptococci increased 238% in the same stretch, he added. Mr. Clark's testimony at times was beyond the comprehension even of the government's attorneys when he spoke of such things as leptosipira ictervhaemorrhagiae. He later explained it is a disease carried by rats. The malady, he said, is an occupational disease of sewer workers in Paris and London.

Common Sense and Health Care Costs

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The entire American health care complex is functioning in an environment of political, social, economic and scientific change. Probably never has Heraclitus' aphorism, "Everything is flux," been so apt as now. Today, basic to much that is of critical importance in politics and economics, is the struggle between individualism and collectivism. Its ramifications extend beyond the tense area of international relations and vastly affect our thinking on such purely domestic issues as the proper role of government in the provision and financing of health care. The migratory proclivities of our population, the trend to industrialization and urbanization have cast up problems of health care with which simple family and neighborhood arrangements cannot cope. The soaring progress of scientific medicine has out-dated earlier concepts of professional practice and accelerated the need for modern methods of financing health care costs.

Kaleidoscopic change confuses all but the most perceptive, and particularly in a time when our problems are many and complex and our interests heterogeneous, such change discourages effort at understanding by broad segments of the population. Clear thinking on most public matters, not just those that have to do with health, is encumbered further by a failure of our media for mass communication. Too often what we read and hear is impression, not fact, the product of propagandists and doctrinaire columnists and commentators. For nearly two generations business and professional men, preoccupied with their own concerns, have largely abandoned participation in politics to highly organized and astutely directed pressure groups whose objectives are special benefits for some irrespective of broad national welfare. It is little wonder that on a subject so inherently surcharged with emotion as health, so much ill-found criticism is heard and it is so easy to gain a following for specious schemes and promising panaceas. Just as those who practice the healing arts must be ever vigilant against the charlatan, so must all thoughtful men guard against social and political quackery in problems of financing health care costs.

The American health care complex is unique, naturally reflective of the traditions and ideals that are foremost characteristics of our heritage and way of life. Our forefathers braved the wilderness of a new land to escape the authority of the monolithic state. They feared the withering vise of omnipotent government in the same degree that they believed in the capabilities of the individual person. So they built into our system of government checks and balances and provided constitutional guarantees of personal freedom. Their philosophy carried over into our economic and social structure as well. It shines forth in our prohibitions, applicable at least to business, against monopoly, conspiracy in restraint of trade and unfair competition. It has encouraged the individual entrepreneur whether in business or the professions. It preordained a decided preference by our people for the private, voluntary way to intervention by government in the solution of our health care problems.

In this atmosphere of individual responsibility and private enterprise, our system for providing and financing health care has developed step by step. It is the product of evolution, a living process that is constantly responsive to changing need and condition; not a static system brought into being by fiat or statute but one in which the new that is good survives while the impractical or ineffective innovation is sloughed off. The hard core of our health care structure

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is nongovernmental. It comprehends the professions, medicine, dentistry, nursing and their allied callings; the private hospitals, sanitaria and nursing homes; the splendid medical schools, pharmaceutical chemists and research laboratories; the important facilities for industrial health care; and our vast apparatus of voluntary insurance that has grown to impressive stature in response to the need for a socio-economic mechanism to help individuals, families and businesses defray the costs of disability. These partners of the American health care team are complementary and interdependent. What aids one aids all. What vitiates the effectiveness of one hampers and potentially destroys the others. Government supplements this complex through its vital public health services, encouragement to the private instrumentalities and assistance to the indigent.

If, as I suggest, our system is peculiarly American, indigenous to our country, the product of never-ending evolution, why is it that we hear a crescendo of criticism of this system? Doubtless there are several reasons, some of them entirely personal and subjective, others stemming from our ingrained national impatience with imperfection and, of course, those conceived and propagated by individuals and groups that think they might profit by advocating a change. You well know the intimate nature and emotional overtones of health and health care. This is a subject on which everyone, informed or otherwise, has an opinion. As Ffrangcon Roberts has pointed out in his book, *The Cost of Health*, "Among all the subjects with which governments are concerned, health is in many aspects unique. Emotion and sentiment are its natural accretions, of which it can be stripped only with the greatest difficulty and those attempting the task run the risk of being charged with callousness." As modern medicine has achieved new miracles in prolonging life and preventing or alleviating disease, as its capabilities have become more widely understood by a better educated public, as the cost and complexity of treatment have multiplied, health care has become an almost universal preoccupation. Ample evidence of this is found in the avid consumption of the pseudoscientific articles on health printed so often in newspapers and popular magazines. The driving impatience of most Americans is well known. It bridles at delay or imperfection. Within reason this is good, but like most virtues when carried to extremes it can become a vice. Our American health care system has the strength that only evolutionary development can impart. In this field we would do well to beware of those who because of impatience see in progress only signs of incompletion. Those who expect perfection here and now have failed to learn the lesson that human progress must needs be unending. There are the critics who seek political preference by appealing to voter gullibility by asserting that government can do the job better or who curry their constituents' favor by promising bigger and better government handouts. There are those critics of the American system who allege that its economics are archaic, that it precludes the most effective marshalling of our medical assets, and that it is operated for the benefit of the providers rather than the recipients of care.

Before examining the validity of these allegations let us consider briefly the alternative to the American system grounded as it is on private enterprise and individual responsibility. The alternative is a system in which both the provision and financing of care is dominated by government. Just as our nation found a century ago that it could not endure half slave and half free, just as any physician will assure you that it is not possible to remain "just a little bit pregnant," so government assumption of responsibility for the individual's health, once introduced, inevitably and inexorably expands and metastatizes. One does not have to be versed in Parkinson's Law to recognize the folly of those who advocate government subsidy of the individual's health care costs while blithely asserting that such financial arrangements will not interfere with private medical practice or the operation of our voluntary hospitals. He who pays the piper calls the tune. The Supreme Court of the United States long since declared that, "It is hardly lack of due process for the Government to regulate that which it subsidizes." The piecemeal expansion of social benefit programs in the health field under the insistent urging of the collectivistically inclined after their failure a decade ago to secure enactment of a forthright National Health Plan, does not alter the alternatives. America can adhere to its own evolving private pattern or it can embrace socialized medicine. It cannot have both.

What shall America's choice be? It is my sincere conviction that our country has everything to gain by persevering with the improvement of private medicine and voluntary private insurance. Conversely I believe that to abandon our system will lead to an inferior quality of care, crushing cost and an attrition of our entire social and economic structure. Briefly let us examine how our system is functioning as opposed to government system elsewhere.

No assurance is needed of the technical excellence and proficiency of medicine as it is practiced in America. You are familiar with its progress which has increased the expecta-

tion of life at birth among American wage-earners and their families from 34 years in 1894 to 70 years today. You need no recitation of American medicine's achievements in its never-ending struggle to conquer the scourges that afflict mankind. Rather, since the attacks on American medicine are primarily economic arguments let us turn to them. It has been alleged that medicine's tenacious adherence to the principle of freedom of choice of physician is not only meaningless for many but, by impeding the development of closed panel practice, contributes substantially to heavier health care costs. Why is freedom of choice of physician important? The answer is because it aligns the inherent drive of the doctor to succeed in his profession with the best interests of his patient and therefore the public. If the physician's patronage depends on his reputation for skillful treatment and proper attention to his patient rather than assignment under a governmental system of capitation or through the economic duress of a private prepayment arrangement whose benefits can only be provided by selected physicians, common sense tells us that the physician's dedication to high professional standards will be reinforced by enlightened self-interest. Contrast the American system, characterized by little patient dissatisfaction with quality of treatment, with the situation that has prevailed in England since it embraced socialized medicine. The comments of Dr. Alastair J. Marshall of Luton, Area Executive of the British Medical Association and counsellor for the National Health System are typical. Dr. Marshall reports that general practitioners in his country now see 120 to 140 patients per day, that because of the capitation system of payment a physician must maintain a full list of 3,600 patients to subsist, that hypochrondriacs are a dreadful problem, that patient complaints, however petty, the prescription of a drug unauthorized by the Ministry of Health and a whole myriad of other infractions of regulation can bring down a fine and censure. One can imagine the immediate revolt of most Americans were they to be subjected to this kind of physician-patient relationship. That it has not induced revolt in England is simply reflective of the less advanced type of health care to which the English people have been accustomed. In its support of the principle of freedom of choice American medicine recognizes that there have been notable instances in which the principle has been abridged and without apparent adulteration in the quality of care provided. Not all elements in our population are equally sophisticated in medical matters. Until the educational level of the least informed can be raised, there well may be situations in which third party selection of the physician to be patronized can be justified as a temporary expedient. But for the mass of Americans freedom of choice of physician, unencumbered by outside influence is the best guarantee of a satisfactory relationship for patient and physician alike.

Fee-for-service, another hallmark of private practice, is a frequent target of the critics of American medicine. They argue that this system discourages patients from securing preventive health care and by placing no limits on the doctor's avarice adds to cost. If we are to judge by the systems of socialized medicine in other lands, the overworked, regulation-ridden physicians who tend their apathetic flocks have precious little time or incentive to do much preventive work. Elimination of fee-for-service has meant little on this score. Here, by the process of public education assisted by spreading programs of industrial medicine and hygiene, we are slowly but surely teaching our people the importance of securing preventive care. American medicine today recognizes that there must be a reasonable relationship between the service provided, the level of skill required and the fee charged. When my grandfather practiced medicine in a little country town in Nebraska 75 years ago, it was sound economically, politically and morally to charge the affluent more to help compensate for the considerable time spent with the indigent. Today radical differentials in fees for the same service are unnecessary because the vast majority of patients can pay their charges with insurance benefits or otherwise and the burden of the indigent is substantially eased by public and private assistance funds. The American Medical Association is encouraging its constituent state associations to develop relative value schedules, attuned to local conditions, as a guide to doctors, insurers and patients of the economic weight appropriate for the various medical procedures. In a number of instances local medical societies are leading the way to a complete elimination of grounds for criticism of doctors' fees by adopting a dollar and cents conversion factor applicable to the relative value schedules. In other words they are announcing to the public the price of every service irrespective of to whom rendered or by whom paid. In San Joaquin County, California, 97% of the physicians have bound themselves to abide by this arrangement. In Long Beach, California, the plan is meeting with equal success. In the process a firm foundation is laid for future qualitative improvement of voluntary health

insurance. As a part of the evolving pattern of medical economics, the American Medical Association has recently urged all physicians to lower charges to the aged and to cooperate with insurers in implementing low-cost coverage for our senior citizens.

The voluntary general hospital is an important pillar of the American health care structure. Once avoided as simply a place to go to die, the hospital today plays a usual and necessary roll in nearly everyone's health care. Despite chronic financial problems arising from the impact of inflation and the continuing necessity of capital expenditure for new facilities to accommodate the expanding patient load and new equipment to support advances in diagnosis and therapy, our general hospitals have met the challenge to progress and today deliver prompt and effective care. Our voluntary system has provided them the funds needed for continuing operation, expansion and improvement. Contrast this situation with that in England where not a single hospital bed been added since the National Health Plan was instituted more than a decade ago and where patients expect to wait two years or more for the removal of tonsils, a chronic appendix, a gall bladder or a gastrectomy. Witness the situation in Canada where, to meet the increased utilization engendered by the new National Hospital Plan, the Dominion is facing up to a staggering three billion dollar hospital bill. Our hospitals have their problems, but what thoughtful person would trade them for those of the social medicine countries?

Now let us turn to the more mundane subject of finance. When the cost of health care began to bulge larger as a part of family living expenses, Americans turned to voluntary health insurance as the best means of meeting the risk of large unpredictable loss due to disability. Though disability insurance in America is more than 90 years old, it was only when the depression of the thirties quickened a wide security-consciousness and reduced incomes and depleted assets made payment of health care costs out of current resources impossible for most that voluntary health insurance began to boom. Even with better times, heavy income taxes and our penchant for mortgaging the pay-check through installment purchases have made voluntary health insurance essential to family financial soundness. Expansion of the protection has been aided by physicians, hospitals, employers and labor unions. Today 121 million Americans have some protection through voluntary insurance against hospital costs, 67.5 million against surgical costs, 33.5 million against regular medical costs, and more than 16.5 million against the expense of prolonged catastrophic disability through Major Medical insurance, the newest and broadest form of coverage. Nearly two-thirds of the employed civilian labor force has voluntary protection against wage loss due to disability. Last year voluntary health insurers paid more than $4.8 billion in benefits, an increase of 14% over 1957. Qualitative improvement of coverage has kept pace with quantitative expansion and has helped spark growth. Benefits are now far more adequate than formerly in amount and duration. Exclusions and onerous conditions are disappearing. Termination of coverage by the insurer is fading as guaranteed renewable individual contracts and group, blanket and association forms grow in popularity. The smooth functioning of the voluntary health insurance system in the public interest has been stimulated immeasurably by increasing cooperation and understanding among doctors, hospitals and insurers. With the encouragement of the providers of health care an aggressive program of such cooperative effort is being carried on in every state by the Health Insurance Council, a federation of trade associations in the health insurance business. Uniform simplified forms and methods have been adopted and hospital admission and insurance identification programs set up. There is continuous research and experimentation carried on by individual insurers, trade associations and professional societies seeking improvements in benefit, procedure and cost. The keen competition for patronage among more than 800 insurance companies and some 85 service plans is a driving force for progress. It is a guarantee that when one insurer devises a worthwhile improvement, others will promptly adopt it and spread its benefit to the entire insuring public. Largely unencumbered by state rate regulation or rigid statutory contract form, voluntary health insurers can be and are responsive to the changing needs of the public and the changing methods of doctors and hospitals.

One particular segment of the public, the aged, deserves special mention in relation to the service of voluntary health insurance. There are today more than 15 million Americans over age 65 and this number is destined to grow rapidly. It is well known that health care needs increase with age. On the theory that these needs are greatest when the individual's income and resources are at lowest ebb and that the senior citizens are beyond the competence of voluntary health insurers a number of measures, notably those authored by Representative Forand, Senator Humphrey, Senator Murray and Representative Dingell have been proposed to Congress. The more modest of them would have the Social

Security system defray the cost of 60 days of hospital care and 120 days of nursing home care per year for all who are eligible to receive OASI benefits. The more elaborate measures are a 1959 version of the Wagner-Murray-Dingell national health plans of a decade ago. Aside from the obvious and fundamental objections that the benefits proposed by these bills are a radical departure from the established concepts of the Social Security system such as would seriously jeopardize ultimate payment of already promised benefits and would saddle our presently overburdened taxpayers with a new, heavy and unnecessary tax, the proposals fail to alleviate the only real problem, that of today's aged who are either indigent or can become so when confronted with unexpected health care cost. No tinkering with the Social Security system will reach them. Even though many of the present aged retired before voluntary health insurance became universally recognized, it is interesting to observe that between 55% and 60% of our senior citizens who need and want such insurance have it today. When reasonable allowance is made for the effect of the many current programs for providing or continuing insurance for the senior citizen, it is well within the capacity of voluntary health insurers to protect in excess of 90% of those who will be age 65 or older by 1970. Group insurance benefits are being continued to the retiring worker and his dependents; plans with benefits paid-up at age 65 are being marketed; insurers are offering coverage to the presently aged without requiring evidence of insurability. It is safe to predict that if voluntary insurers are permitted to press ahead with present programs, the overwhelming majority of tomorrow's aged will have no acute problem of meeting their health care costs because they will have adequate voluntary insurance. How foolish it would be to impose on our people the additional heavy drain of an expensive permanent program to alleviate an ill defined and a transitory need. The Social Security Administration estimated the first year costs of the health care benefits proposed by the original Forand Bill at $800 million. Competent insurance actuaries believe that initial costs would exceed $2.1 billion and this would be but the beginning. If we can learn anything from the experience of such programs in other countries it is that initial cost estimates are always gross understatements.

Abandonment of our system of private medicine and voluntary insurance for any government scheme could well be the straw that breaks the back of the American economy. Social Security benefits already promised, even if not further expanded in accordance with congressional election year custom, will require by 1969 the collection of $216 per year from every worker earning $4,800 per annum and a like sum from his employer. Today, for many, Social Security taxes exceed their income taxes. It is naive to assume that there is no limit to what government can exact from the citizen. Government creates no wealth. It can only take from one person and give to another while losing considerable of the nation's economic life-blood in the transfusion. Yet fully one-quarter of the 7,300 bills now pending in Congress would confer special benefits on certain segments of the population without adequate provision for payment of these benefits. Enormous government spending even without the intensifying factor of recurrent deficits is the carcinogenic agent that triggers the cancer of inflation by increasing the cost of doing business at all levels while dampening economic incentives. The flight from our government's bonds today is more ominous than we like to admit. The Treasury has failed badly in recent financing operations. Until we achieve a substantially balanced budget and can reestablish a belief in the government's fiscal responsibility the threat of really serious inflation will be great. When the first responsibilities of the government must be to maintain a military establishment strong enough to deter imminent aggression or failing that, to retaliate, and to insure a producing economy sufficiently vigorous and competitive to meet and best the cold war enemy in the world's markets, it is inviting disaster to propose that government do what private enterprise and individual people can do and are doing for themselves. Let us remember also, in all deference to our doctors and hospitals, that good health and long life are more the result of satisfactory living standards, adequate food, clothing and shelter than all the pills and palliatives in Christendom. We must keep our economy sound to enjoy substantially full employment and maintain America's standards of living.

Common sense tells us that the American system of health care, while far from perfect, is superior to any other that man has devised. It is compatible with our concepts of individual human freedom, dignity and responsibility. It poses no threat to our nation's fiscal integrity or its productivity. Because it works well in the public interest it is entitled to our vigorous defense in private and in the public forums. With understanding and cooperation its progress will be unending toward better health for all.

WHO PAYS FOR WHAT?

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There is one portion of the responsibility for the health of those employed in industry which is fairly easily determined according to the common practice in large industry and according to the views of the American Medical Association. This is well described in the brochure entitled "Scope, Objectives and Functions of Occupational Health Programs" which was prepared by the Council on Industrial Health in 1957 and subsequently approved by the Board of Trustees and the House of Delegates. It is, in effect, a guidepost for management, labor and medicine insofar as this portion of the entire health program is concerned.

In this statement, "occupational health program" means a program provided by management to deal constructively with the health requirements of employees and employers in relationship to employment. "Occupational medicine" means that branch of medicine practiced by physicians in meeting medical problems and needs under occupational health programs.

1. Health maintenance is primarily the responsibility of the individual.

2. An occupational health program represents management's recognition of its obligation to provide a safe work environment, its opportunity to promote better health among its employees.

3. The team includes physicians, nurses, industrial hygienists, technicians and others in industry who are responsible for the employment, safety and well-being of workers.

4. The program (a) observes the basic principle of service to the individual by a physician and conforms to medical customs in the community, (b) complies with existing laws, (c) emphasizes prevention and health maintenance and (d) utilizes community medical resources when adequate or when they can be developed reasonably.

5. The physicians participating in the program (a) maintain high standards of professional service and conduct for the benefit of employee and employer alike, (b) cooperate and maintain proper liaison with other physicians in the community and with the local medical society, (c) are engaged and compensated in accordance with the Principles of Medical Ethics of the American Medical Association and (d) do not use their occupational health affiliations as a means of gaining or enlarging a private practice among employees.

6. The emphasis is on values attainable through applying advances in preventive medicine and in engineering. The program is oriented to the work environment and to the health of the worker in relation to his job.

An occupational health program is to be distinguished from medical programs for personal (nonoccupational) illness of employees. The latter are designed to produce varying degrees of diagnostic and therapeutic medical, surgical and hospital care, generally aim to lighten the economic burden on employees.

7. The objectives are (a) to protect individuals against health hazards in their work environment, (b) to insure and facilitate the placement and suitability of individuals according to their physical capacities and their emotional make-up in work which they can reasonably perform and (c) to encourage personal health maintenance.

Specifically this program consists of: (a) regular in-plant visits for the specified number of hours daily or weekly, (b) physical examinations of applicants for employment with recommendations on placement consonant with physi-

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cal and mental attributes of each applicant, (c) medical re-examination of employees during illness or injury and upon their return to work following illness or injury, (d) periodic physical examinations and interviews by schedule and upon request of industrial employees, (e) advice to employees and management regarding retirement, (f) provision of medical and surgical attention, either directly or by referral, for injuries and disease arising out of and because of occupation. The treatment of injuries or illness not industrially induced is the function of nonindustrial medical practice. The physician in industry is concerned with such cases only in two categories: minor illness, i.e., physical disorders which temporarily interfere with an employee's ability to complete a working shift and for the relief of which immediate medical aid is indicated, and first aid for urgent sickness during working hours and extending until such time as responsibility for medical care can be assumed by the worker's personal physician.

8. Guidance for employees needing or seeking medical and surgical attention beyond that which is properly first aid care.

9. Cooperation with the employee's physician for tne maintenance of optimum health.

10. Education of the employee in personal hygiene, good living, working and recreation habits, the prevention of illness, the early recognition of deviations from optimum health and encouraging the correction of correctable physical handicaps.

11. Cooperation with the safety department on instructions for emergency life saving, resuscitation and proper immediate care of injured employees under individual or major disasters.

12. Inspection and correction of environmental hazards at the place of work. Cooperation with the engineering and maintenance departments in prevention of work hazards.

13. Advice to manufacturers concerning the influence of their products on health.

14. Encouragement in the use of individual protection against injury or disease by vaccination or other acceptable medical measures.

15. Cooperation in the supervision of plant sanitation, food service, drinking water and welfare benefit plans of the company.

16. Cooperation with public health agencies, scientific institutions and community agencies which have n proper and legitimate contribution to make to the health welfare of industrial workers as citizens of the community.

17. The development and maintenance of adequate and useful medical records.

18. Assistance to the employee and employer in the proper administration of workmen's compensation benefits.

Alcoholic Threat Technique

You can lead an alcoholic to a clinic and make him not drink, experts on the illness recently agreed. The secret, a physician told an industrial symposium on alcoholism, is the early detection of symtoms and the threat of losing his job.

Such a threat, Dr. Daniel J. Feldman explained, might be "heresy" but it has proved effective in many cases at the New York University-Bellevue Medical Center Industrial Alcoholism Clinic.

Patients sent to the clinic in the conviction that they were neither alcoholics nor problem drinkers have begun treatment because the employer has used the or-else method.

After two or three weeks of treatment, or even after the second visit, the patient has admitted his need for treatment.

Alcoholics with good work records of 10 to 15 years with their companies were found to have strong motivation for keeping their jobs. To these employed alcoholics the job and company mean more than they do to the drifting alcoholic; in some cases the loyalty to the company is even greater than toward wives and families.

When placed on probation for treatment by companies who participate in the program, these alcoholics have responded well. The first report of the clinic showed an 82% arrest of alcoholism and rehabilitation.

Some have been followed up as long as five years. They returned to work, carried out jobs in a satisfactory manner even though some may have had continuing but controlled drinking problems.

Dr. Feldman warned that the threat, or duress, method would not work unless the company had some provision to make treatment available. Under the proper circumstances the employer not only has done himself a favor in keeping valuable employees, but he also has helped to save the employees from eventual deterioration and unemployment, he noted.

It was, he added, an absolute necessity that patients be assured that the treatment would be the normal confidential doctor-patient relationship, free of "company spying."

—Emma Harrison in *New York Times*, October 30, 1959.

Medical Service in Small Plants

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There is serious need to publicize the feasibility and worth of the effective small plant programs which have been developed and to encourage their adoption.

It may seem incongruous for a physician of U. S. Steel to discuss medical service for small plants. Two facts, however, may make this appear less inappropriate. First, for eight years, prior to joining U. S. Steel, I worked as a consultant in occupational medicine to the industrial policyholders of Liberty Mutual Insurance Company. During that time we had considerable success in developing methods of effective industrial medical programming for small plants. This paper is primarily based on that experience. Second, even a large industry has some small plants, so that the problems of medical service for small aggregations of people is common to industries of whatever size.

A small plant is usually defined as a plant that employs less than 500 people. For purposes of this discussion, however, further refinement of that definition is needed. It is not very difficult to build a fully effective industrial preventive medical program for a plant that employs 450 people. It is very difficult to do if only 25 people are employed. Thus, we need to distinguish between a small plant and a very small plant, in considering methods of furnishing industrial medical services. The dividing line between the two is probably somewhere in the neighborhood of 100 people. Fewer than that we will consider represents the very small plant.

The reason for making this distinction is the fact that a fully effective program requires that a doctor and nurse be present in the plant at regularly scheduled times. This can be accomplished in a small plant by using a part-time doctor and nurse. To my knowledge this has not been arranged in any plant that employs less than 100 people. This does not necessarily mean that it is impossible to do so, but the difficulties increase as the size of the plant decreases.

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Let us leave the "very small plant" for later in the discussion and consider first the "small plant." Four hundred and fifty employees in one plant ordinarily justifies the employment of a full-time nurse. It does not usually justify the employment of a full-time doctor. Two hours a day, four or five days a week, of in-plant doctor time should suffice. For such a plant, then, there is the problem of finding the right kind of a full-time industrial nurse, with the right personality, caliber, interest, initiative and orientation.

The problem of finding the right kind of a physician for such part-time service is equally crucial. Again it must be a physician with the right personality, caliber, interest, initiative and orientation. Such a doctor may be found in private practice in the community; one who is interested in having a single such association with industry as a stimulating and challenging diversion from the routine of private practice. Such a man may be one who has other industrial affiliations in the community in addition to his private practice. In a few communities, several small plants have combined their interests to hire and share a physician who thus devotes himself full-time to industrial medicine. This is an especially effective method, since it furnishes to the plant a part of the time of a doctor who is making a career of the special field of industrial medicine.

With a staff of a full-time nurse and a part-time doctor, the full gamut of preventive medicine in industry can then be developed. There would ordinarily not be an industrial hygienist in a plant of this size, but private consultants or the services of local or state governmental industrial hygienists would usually be available as needed. If this is a small plant of a larger company, industrial hygiene service from the central office would usually be available. There would probably not be a clinical laboratory in

the medical unit. There might not be an x-ray machine. But these and other services would commonly be available in the community. Thus the nurse and doctor represent the nucleus around and through which a fully effective program can be developed, using outside ancillary services as needed.

If the plant has only 150 or 200 people in it there may not be need for a full-time nurse. Developments in the past 10 years have demonstrated the feasibility, and the worth, of part-time, in-plant industrial nursing service. It is not too difficult in most communities to find a nurse, who is married, who may have one or more children, who wants the added income of a part-time position, but does not want to spend a full eight hour day away from her family. A plant of 200 people might well use four hours of her time, five days a week. When such a nurse, with the right qualifications, has been brought into industry the results have been most gratifying.

Another means of obtaining part-time in-plant nursing has been the combining of the needs and interests of two or three such small plants, each to share portions of an eight hour day of an industrial nurse. This has the advantages described above, in the share-the-full-time-doctor plan, of obtaining the part-time services of a nurse who is making a full-time career of industrial nursing.

With either of these plans, of course, a part-time doctor should also be employed. For a plant of 200 people, an hour of in-plant doctor time three or four days a week might be appropriate. It should be emphasized here that a doctor-nurse team is necessary for the development of an employee health program. A nurse working alone is severely limited in the scope of program she can develop and service she may provide.

Another possible source of part-time in-plant nursing service that is available in some communities is the Visiting Nurse Association. In those areas in which this service to industry has been developed properly it has worked out very well. Three special considerations merit mention here. The VNA must recognize that industrial nursing is a special field that requires knowledge of workmen's compensation statutes, union contract stipulations, benefits plans coverage, job placement problems and the like, and the visiting nurse who services industry must acquire such knowledge. The contract with industry should stipulate that part-time in-plant doctor service will also be obtained. VNA nurses should not be rotated through the industrial assignment, but one nurse should be assigned to one plant, to permit the continuing development of employee-nurse rapport so essential to an effective employee health service.

In a few communities it is possible to contract with a local group practice clinic to furnish the part-time, in-plant nurse and doctor service. This represents a growing opportunity to obtain from a central specialized source the amount and scope of in-plant service that is needed. If the group that makes up the central clinic limits its interest to surgical attention to compensable injuries, they will usually furnish an in-plant service of equally limited scope and a real preventive medical program will not develop. If the members of the group understand the objectives and the techniques of preventive and constructive medicine, a very worthwhile program can be developed from this source.

When employees are working in the plant at hours that are not covered by in-plant nursing service, there is need for one or more employees trained in first-aid to meet an emergency. These are men regularly employed at other duties, but available for first-aid when needed. In the small plant, one should be identified as the First Aider and another as his alternate. They should have training by Red Cross, Bureau of Mines or equivalent. They should be furnished with limited first-aid equipment, supervised by the nurse. They should maintain a simple first-aid record system, which the nurse reviews at her next visit. Specific arrangements should be made for handling emergencies requiring more than first-aid attention. This includes the telephone number of the physician on call, the ambulance arrangements for transportation and the like.

A periodic health examination in a small plant presents some difficulties, none of which are insurmountable. A simple urinalysis and hematocrit can be set up even in a small plant without being excessively costly. Other needs, such as blood studies in benzol workers, chest x-rays in the dusty trades and the like, can usually be met in the community. A mobile health examination unit in industry is a recent development of great interest. Some companies, for example Phillips Petroleum, have such a unit that they bring to their smaller locations. For a smaller company service of a somewhat similar sort has been developed by Dr. Logan Robertson of Asheville, North Carolina.

It should be apparent, then, that if a small plant is really interested in developing an employing health service, application of some ingenuity, search for the right kind of part-time medical and nursing service, and referral to previously developed patterns of programs of proven effectiveness make this entirely feasible and well worth while.

The "very small" plant, employing 25 or 50 people, however, is a much more difficult matter.

Usually if such a plant has any medical arrangement, this is limited to sending an injured employee to a neighborhood physician. The same physician sometimes performs the occasional pre-employment examination that such a plant may request. Means of furnishing the full gamut of industrial medical service for the very small plant, that could be generally useable, have not been developed. However, there are ways of furnishing a service beyond that noted above. Local or state governmental industrial hygiene services are often available to provide environmental health studies in the plant. Arrangements can be made with a neighborhood physician to perform periodic health examination for this small segment of people. It should also be possible to obtain the interest of that physician to visit the plant, even if only once or twice a month. This would allow him to become familiar with job demands and environmental factors, so that his pre-employment examinations could become more effective preplacement examinations. These visits would assist plant personnel in their safety efforts. They would permit the physician to explore both the man and his job in the periodic health examinations, since the job is a most important part of the total health picture of a man. They would also permit him to be of greater assistance to management in personnel and placement problems that have a medical aspect.

We have offered these suggestions to indicate that, while it may not as yet be possible to develop the full range of industrial medical services to management and employees of the very small plant, it is possible to improve considerably the level of service that is customarily being furnished today.

In conclusion, we would like to emphasize what we consider to be the single, most significant determinant of the scope and effectiveness of an industrial medical program, the orientation of the doctor and nurse. To a great many, probably a majority, of doctors and nurses today, industrial medicine means simply the care of industrial injuries. When such a physician and nurse are brought into industry, their program is usually equally limited to the treatment of injuries. If the physician and nurse, on the other hand, are aware of and understand the objectives and techniques of preventive and constructive medicine, even though they are only part-time, they can bring to the small plant an employee health service of full range and effectiveness.

In the larger communities there are usually larger plants that employ full-time doctors. These are men who are making a career of the specialty of occupational medicine. Almost universally they will be glad to counsel with small plant management to plan an industrial medical program that fits the small plant's needs.

For each geographic segment of the United States and Canada, the Industrial Medical Association has appointed a District Counselor. These are doctors who are specially qualified in occupational medicine. They can be of considerable assistance to management, physicians and nurses in planning and developing effective in-plant medical programs.

It has been said that the greatest unmet need in industrial medicine is in medical service for small plants. The need is there certainly, but there is not a need to grope for effective methods of furnishing health service to small plants. Methods of proved effectiveness have already been developed. There is serious need, however, to publicize the feasibility and worth of such small plant health programs, and to encourage their wider adoption.

Skin Care Russian Style

Grandmother's long accepted formulation of glycerine and rosewater takes on a new twist behind the iron curtain. An article appearing in the March issue of *Rabotnitsa* (Woman Worker) on facial skin care offers this suggestion: "It is desirable to rub the skin once or twice a day with fortifying substances, e.g., 2 gr hydrochloric acid, 10 gr glycerine, 70 gr mint water and 30 gr vodka."

—*Glycerine Facts*, June 15, 1959.

Health Department Services to Small Plants

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Much confusion concerning health services to small plants derives from a definition of terms. Using Detroit as an example, 815,000 workers are employed in 42,250 workplaces of which 3,500 are engaged in manufacturing. Over 60% of this work force is employed in non-manufacturing industries. The average number of workers per workplace is under 20, the median number approximates eight. About 41,000 of Detroit's workplaces contain four to 25 employees. When we talk about health services to workers in small "plants," we are talking about most of our worker force and most of our workplaces.

Experience in the Bureau of Industrial Hygiene of the Detroit Department of Health indicates that environmental health problems within the workplace are more prevalent and severe in non-manufacturing industries than in all but a few high hazard manufacturing industries. Large manufacturing plants themselves provide more or less complete worker health service. Most manufacturing plants receive attention from outside agencies such as insurance carriers, city and state inspection services of various kinds and community health agencies. Other workplaces, and especially those engaged in agriculture, construction and service are woefully neglected. In Detroit, such service industries as dry cleaning and laundering, repair garages, medical care, restaurants, salvage. metal pickling, etc., have been found in great need of attention.

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Health services to workers in small workplaces will have to come primarily from the official health agencies at all levels of government, assisted by available community health services. The operator of a small plant is no more aware of health matters than is the average citizen. It is his job to produce something at a profit to meet his payroll and stay in business.

He is simply not health oriented and will do no more than he is required or persuaded to do to keep conditions healthful in his own workplace. He is not likely to feel much obligation for the general outside-the-plant health problems of his own workers.

The worker health problem can be divided into two aspects; those which arise from stresses within the workplace (occupational health impairments) and those which arise within the community environment.

The first class of problems are attacked directly by the practice of industrial hygiene, and a successful methodology for this practice has been evolved in official public health agencies. Although 40 of our 49 states provide such service at state level, 22 of them have five or less such personnel on their staffs. Only a few such as New York (49), Pennsylvania (34), Michigan (21) and California (21) are providing sufficient personnel to make some impact on the problem. Some 30 city and county health departments have programs in varying stages of development. Most notable are those in Detroit (17), Baltimore (11) Los Angeles City and County (15) and Houston (8). It is probable that many of the state and local units have more

positions budgeted but vacant because of the inherent shortage of trained personnel and non-competitive salary schedules. Of the 1500-2000 practicing industrial hygienists in the United States, about 400 are employed by state and local governments and 55 by the U. S. Public Health Service. The balance are employed by large industry to service its own needs.

Direct inspection of workplaces to eliminate health hazards is a needed and effective service when adequate staff is available. Detroit, which has been conducting such a program for 22 years, finds that about two-thirds of all workplaces inspected require specific environmental improvements for worker health protection. In 1958, these improvements benefited 77,224 employees out of the work force of 169,200 in the 2,539 workplaces that were inspected. Compliance with correction orders issued exceeded 98% without specific court action.

The second phase of the industrial hygiene or occupational health program is to tackle the worker health problems which are nonoccupational and arise outside of the workplace. This the programs must do indirectly by trying to get the community health services, both official and nonofficial, to devote a fair share of their efforts to workers in the small plants. Results have been meager because techniques for reaching workers specifically as a group have not been developed as they have for infants, school children, families or community chest x-ray and immunization programs.

The discovery of effective techniques awaits only the application of sufficient effort. Considerable negative information is now accumulated on techniques that will not work or work poorly. Most failures are the result of lack of knowledge of the nature of the workplace, of management, of workers, which all too often results in incompatibility of the service offered and the consumer. We in industrial hygiene, who specialize in the workplace and know it best, have had to make a choice, because of small staffs, of the area in which we should concentrate our actions. Most of us have devoted our primary effort to reduction of health hazards in the work environment because that appears to be most urgent. Some of us who have larger staffs are trying to devote more time to the second phase of the problem but the effort is weak and progress is slow.

The Detroit Bureau of Industrial Hygiene has had some small successes. Minor credit is accepted for getting industrial hygiene or occupational health teaching programs in two of our state universities. We have succeeded in getting an industrial first aid manual and text published and the Detroit Board of Education to teach the course. Over a thousand worker-students have received training during their working hours at the employers' expense. Experience indicates that the program will need the catalyst of an appropriate city ordinance to improve its effectiveness. Cooperatively, a promising technique for worker health education, supported primarily by nonofficial community health agencies, has been evolved. Our Community Chest X-ray Program now specifically includes a number of small work-places. We have been working in committee with community health groups to establish a pilot self-supporting health service for a compact group of small plants. Most promising is a pilot project of direct health counseling of workers in their workplace, conducted jointly by the Industrial Hygiene Bureau and the Division of Nursing of the Detroit Health Department. This will be reported in a forthcoming issue of the *American Journal of Nursing.*

The writer believes that most worker health service should be provided by private enterprise. Usually it should be supplemented by the non-official community supported health agencies. Responsibility for bringing all available resources to bear on the problem lies with the official health agency. It must provide not only encouragement but help in the development of effective methods. Some regulatory functions, such as an industrial hygiene inspectional service will have to be provided on an official basis. Unfortunately, most state and local governmental industrial hygiene and health units are now so understaffed and underequipped that they can give little or no effective service. This situation must be corrected in order that healthful working conditions may be achieved in our small plants and methods developed whereby the owners, through privately operated medical care programs and the community supported health agencies, can give their employees the same industrial medical and health services now available to employees in large concerns. The total program will require expansion of university training facilities and recruitment of students to provide required technical personnel, expansion or redistribution of health department service, perhaps direct assessments on employers to partially defray the cost of the service and a very small amount of legislation or ordinance. The nonofficial community health agencies must accept responsibility for doing an adequate job, not only by the application of sufficient effort but also by willingness to work together as a group. It is high time for public health, in this complex technological age, to give its sorely needed attention to the worker who has made it all possible.

1959 National Health Forum Special General Session on Small Plants

a Summary . . .

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Our problem is how to bring occupational health, not medical care, to the great majority of our employees — those working for the small employer. The real need is obvious to all who have given it serious thought. Unfortunately there has been much talk (at least by those in the health fields) but poor listening and, with a few gratifying exceptions, even less action.

Before we condemn anyone for lack of action, let's remember that there are many other fields where the "obvious" has lain dormant for decades. For example: In 1898, the first forestry school in America was founded by Dr. Carl Schenck in the mountains of Western North Carolina. By 1909, he had demonstrated the value of planting, selective cutting and proper preventive care. By 1913, this school had graduated 400 foresters who became our leading pioneers in the philosophy of conservation. Although there was progress in the national forests, and among some of the large landowners, it was not until 1941 that the first tree farm for a small landowner was dedicated. The American Forest Products Industries, Inc., through their educational efforts, have sparked a wide acceptance of an idea which went practically unused by the small landowners for four decades. From little or nothing in 1940, it has today become almost a way of life throughout our country with 48,000,000 acres and over 14,000 tree farms involved.

Today we face the same problem that Dr. Schenck did 50 years ago. Here's something of known human and fiscal value that is being practically overlooked by smaller employers. Why?

Let's take a look at this man who is seemingly so blind. Why hasn't he seen these values? In the first place, he really hasn't had time to look. He's faced daily with problems that must be handled immediately (capital needs, union negotiations, sales, production, taxes, etc.) He has a limited staff and thus must handle many of the problems himself, leaving him little planning time even for acute production problems, much less long range thinking about his employees' health.

Even if he were convinced of its real value, working out the problems of a coordinated program such as the highly successful "Hartford Plan," would require a lot of time, which he doesn't have, and inspired leadership. Convincing him of the value is frequently difficult, too, for his records often don't indicate some of the real costs — such as absenteeism, turnover, group insurance, etc. Besides, if he believed that such a preventive program would save, say, 10 dollars per employee per year, he would multiply his returns by one or two hundred rather than by thousands, like the large employer. So we see that the small employer must expend more time and more money for a seemingly smaller return. On the other hand, he should be much closer to his people and thus have a better opportunity to gain their participation and assistance.

Should he then turn the leadership in this important field over to the unions? Unions have a great interest in the health of their members,

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and some are recognizing the importance of the preventive aspects rather than confining their interest to the curative side. But remember our subject is "occupational health," and when you separate key players (in-plant nurse and physician) of the program from the site of employment it becomes something else. Of course, the humanitarian union leaders are interested, and it is incumbent upon them to help obtain proper medical care programs for their members and dependents. It's good for their members, it's good public relations, it's helpful in getting new members, but it is not occupational health! (There are some instances when it is impractical for the employer to set up a program, such as in the building crafts, and then joint union-management action is the only logical answer). Health programs for the employees is an area where the union and the employer need have no conflict, but the employers should take the initiative and lead the way. If they default, then they should not complain if the unions or the government fill the gap. If union leaders are interested, then the employers should be even more so, because the survival of an enterprise depends upon the skills, abilities and attitudes of its people. There is an inescapable, even though unrecognized, mutuality of interest between the employee and his employer. Likewise there is a direct interdependence of health and performance. Here I would like to quote an outstanding business consultant, who states in his book, *Practices of Management*, "The success, ultimately the survival, of any business, large or small, depends upon its ability to develop people. While this can not be measured by any of our economic yardsticks it is, none the less, the final measurement."

Perhaps, then, this small employer should look to the quasipublic operations. Leadership from the Public Health Department initiated this plan and it should, perhaps, work under such a title now. Again, this is not occupational health as the name implies, but rather public health screening — no preplacement exams, no regular in-plant visits by physician or nurse, no adequate environmental surveys, no close follow-up of periodic findings, no on-site counseling, no return after illness exams, no contact with ill employees — thus missing so many of the essentials of a good occupational health program, and greatly curtailing the possibility of real dividends. Some say that "something is better than nothing," but this philosophy has its dangers, too. During the 10 years of the Industrial Health Council's existence, not one of their employer clients has seen fit to expand into a comprehensive occupational health program. In fact, real efforts by qualified industrial physicians to interest them have met with no success. It seems that this is a case of "riding a bicycle while you believe you're driving a Cadillac!" How much better it is to look upon such an operation as a health screening program — a fine adjunct to an in-plant program, but in no sense of complete industrial health service. Its prime purpose might well be health education, using the battery of tests as an educational tool for the employee and employer. A similar operation in the south has recently gone into bankruptcy and a survey of the participating employers showed only one in four interested in continuing any service, and most of them only at the same unrealistic cost figure that had contributed to the bankruptcy.

Let's then take a look at the role of public health agencies for our employer — and an important one it is! He can look for help here in two areas, information and service. More and more health officers are grasping the deep significance of occupational health, and are doing a good job in serving as catalysts between employers and physicians to develop sound programs. There are many of their existing services that can be utilized in order to keep costs within reason, but we must not look to this governmental branch to develop and service the entire program. They already have their hands full and are not staffed, financed or qualified to take on this tremendous over-all task. A public health leader in this field, Dr. Lester Petrie says, "There are three aspects to the public health mission in occupational health: (1) to set the right example for other employers by having sound programs for our own employees, (2) to teach employers (including governments) their job in the protection of the health of their employees and (3) to make Health Department services available when needed to initiate such programs.

"The performance of this mission is based on the philosophy of 'to each his own' to each employee, employer or profession in private enterprise, government or education — his own responsibility and his own rewards!"

Doesn't this hold more appeal than the statement, "As soon as the official health agencies devote as much staff to the special problems of the occupational environment as they do for community sanitation inspection, we will have the in-plant health problem well in hand"? Official agencies should not be looked upon as an increasingly bountiful father who furnishes us all our needs. Let us remember that governments are not wealth producers and must depend on our money to function. To continue the previous quotation, "This program will require expansion of university training, recruitment of students, appropriation of public funds, direct

assessment upon employers, a small amount of legislation and a revision of the self-centered thinking of many community health groups." If interested groups will coordinate their efforts and furnish real leadership, perhaps appropriation, assessment and legislation will not be necessary!

If all industrial clinics were operated properly, we could expect much progress in preventive programs. Unfortunately, many are primarily interested in industrial surgery, and give the occupational health aspects scant attention. Let's face it; we shouldn't expect the average man who has devoted his life to developing surgical skills to have a burning interest in health examinations, job placement, educational matters and other preventive problems. I know fine industrial surgeons who have never visited the plants they serve or learned their management's and employees' work problems. Some are even willing to do employment examinations at reduced fees to be assured the traumatic work. Some of these clinics will develop separate departments of occupational health and serve as real centers of progress, but many, I fear, will fail to realize the tremendous opportunity open to them in the field of prevention.

Part-time physicians' services needs a closer look by all of us. Undoubtedly, the great bulk of occupational health services in this country will be rendered by the general practitioner for many years to come. Those of you who are dedicated to the promotion of better occupational health in small plants should seriously consider how you can best serve this man. It has been my experience that, once an employer is convinced that he should have a sound preventive program, spells it out in detail and is willing to pay realistic rates rather than some bargain scale, good physicians can be found to serve part time. Of course, they need guidance, but isn't that the very function of our own full-time industrial physicians, professional associations, health departments and other agencies? We must find means of reaching the small employer, convincing him of the true values of occupational health and aiding him to organize a sound program, whether it be with a full-time physician serving several plants, a surgical clinic, or a part-time practitioner. Concurrently, efforts must continue toward informing physicians and other groups of the true scope and objectives of such programs.

Leaders in occupational health are traveling the country over, trying to pass on their message, but more often than not end up talking to each other! Many feel flattened, flabbergasted and frustrated, and are convinced that a new approach is long overdue!

Following the War Between the States, the South, too, was flattened, flabbergasted and frustrated, when Henry W. Grady, the great Atlanta editor, made his famous talk about the funeral of the one-gallus farmer; "I attended a funeral once in Pickens County. It was a poor one-gallus fellow whose breeches struck him under the armpits and hit him at the other end about the knees. They buried him in the midst of a marble quarry, and yet the little tombstone they put over him came from Vermont. They buried him in the heart of a pine forest, and yet the pine coffin was imported from Cincinnati. They buried him within touch of an iron mine, and yet the nails of his coffin and the shovel that dug his grave were imported from Pittsburgh. They buried him by the side of the best sheep grazing country on earth, and yet the wool in the coffin bands themselves were brought from the north. The South didn't furnish a thing on earth for that funeral but the corpse and the hole in the ground!" This speech created an awareness of the need and stimulated a determination to do something about it, which eventually led to the progressive industrialized South we now know. Occupational health needs a Henry W. Grady!

Certainly we have an awareness of the need. Do we also have the determination? If so, then we must formulate some positive action toward the solution of this pressing problem. A correlation of effort, a pooling of our many fine resources, can lead to the formation of a multidisciplinary organization for the promotion of sound occupational health. American Forest Products has demonstrated that conservation can extend to small farms. Will you demonstrate the same for the employees in small plants?

In closing, I would like to quote the great German philosopher, Goethe, as a charge that all of us may take with us:

Use this day loitering
T'will be the same story tomorrow,
And then the next grows more dilatory.
Soon days are lost lamenting over days!
Are you in earnest? Then seize this very minute!
Courage has power, magic and genius in it.
Only engage, and the mind grows heated.
Begin it, and the work will be completed!

Present and Future Prospects

Health Insurance Protection for the Retired

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Health Insurance Association of America

Since individuals, labor unions and employers are becoming increasingly cognizant of the importance of health protection in the later years, and since the voluntary mechanism for providing this protection exists, the coverage of older persons will increase rapidly in the future.

Today seven principal methods are being employed by insurance companies providing protection for the aged[1] against the costs of medical care. These methods have largely come into being in the past few years. These methods are:

1. continuation of insurance on older active workers under group insurance plans;
2. continuation of group insurance on workers who retire and their dependents, generally with part or all of the premium paid by the employer;
3. continuation on an individual policy basis of coverage originally provided by group insurance, this being accomplished by conversion of the group coverage on termination of employment or membership in the insured group;
4. new issuance of group insurance on such groups of older people as association of retired persons or employees, retired teachers and civil servants, and Golden Age Clubs;
5. continuation into the later years of individual insurance purchased at the younger ages, including lifetime guaranteed renewable coverage;
6. new issuance of individual insurance at advanced ages; and
7. issuance of insurance that becomes paid up at age 65, thus enabling the policyholder to pay for his protection during his productive years.

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Other types of health insurers employ certain of these approaches and are making valuable contributions to the extension of health insurance protection to aged people.

Several recent studies bear witness to both the relative recentness as well as the effectiveness of these developments. A survey conducted by the Health Insurance Association of America in 1957[2] indicated that among 160 group insurance plans underwritten by eight insurance companies which write about two-thirds of all group health insurance in the United States, 48% of the plans provided for continuation of coverage after retirement for both employees and their dependents in 1956. In 1952, only 24% of these 160 plans had the continuation of coverage provision in the policy. Thus, in four years the proportion of these group cases providing for continuation of coverage at retirement had doubled.

In New York State, between 1951 and 1956, according to a statement of the Superintendent of Insurance, the number of master policies providing such coverage in retirement had increased four-fold.[3]

A survey conducted by the New York State Insurance Department in 1957[4] among all insurance companies licensed to do business in that state showed that 63% of all group plans providing for continuation of coverage after retirement had the provision included in the policy during or subsequent to 1954.

A more recent survey of 92 group insurance plans conducted by the U. S. Bureau of Labor

Statistics in early 1958[5] indicates that 68% of the plans in early 1958 provided benefits for retired workers as compared with 54% in late 1954. In all but three of these plans, the study further indicates, the employer pays all or a large portion of the premium. This recent trend towards providing continuation of coverage at retirement through the group mechanism will not only have a marked affect upon persons reaching retirement age in the future, but will also make its presence known on a more immediate basis. An informal survey of five of the leading group insurance writers reveals that about half of the employers who are currently installing retirement benefits on presently active workers also provide the coverage to former employees already retired.

A relatively few years ago, most hospital expense insurance policies sold to individuals terminated at age 65. Currently, at least 10 large insurance companies offer policies which are guaranteed renewable for lifetime and this number should multiply significantly in the near future.

The most recent nationwide over-all estimate of the number of persons in the United States 65 years of age and older having some form of voluntary health insurance coverage was made in March, 1957, by the National Opinion Research Center, the estimate being 39% of all noninstitutionalized persons age 65 and over.[6] It should be noted, however, that the U. S. Department of Health, Education, and Welfare estimates that 43% of OASI beneficiaries had some form of voluntary health insurance in the fall of 1957.[7] This study further showed that while, on the average, 43% of all OASI beneficiaries had some form of health insurance, the percentage was highest in the age 65-69 group (49.5%). It was also generally higher among female beneficiaries (45.1% for all aged 65 and over), and among those beneficiaries, in turn, was higher for single females (49.8% for all aged 65 and over). It is noteworthy that of all OASI single female beneficiaries age 65 to 69, 57.9% were protected by some form of voluntary health insurance, and 31.7% of single female beneficiaries age 80 and over had some form of voluntary health insurance.

However, any estimate of the number of covered aged in relation to either the total number of noninstitutionalized persons age 65 or over in the population or to the total number of OASI beneficiaries produces an inaccurate conclusion with respect to the role being played by voluntary health insurance, since it employs a noncomparable, and hence invalid, denominator. This is so because there is a sizable percentage of the aged in either of these groupings who do not need or want, or who might consider that they do not need, health insurance protection. Their total never has been estimated with any precision. However, it is known that 18% of the aged are public welfare recipients under the federally aided public assistance program and, as such, eligible to receive health care.[8] In addition, there is the unknown number of aged who, for various other reasons, do not need, want, or believe in (for religious or other reasons) health insurance coverage. These include those who receive care from the Veterans Administration, the Medicare program, the Indian Health program or local public or private agencies; those who receive care as being totally and permanently disabled, or as being members of the armed forces, seamen, members of religious orders or as professional courtesy; and those who have sufficient income, accumulated assets or family resources to feel no need for insurance protection.

That these factors are real considerations in the minds of people is borne out in a 1957 public opinion study in Michigan[9] which revealed that 15% of the people not covered by a prepayment mechanism "don't think we need it." Another 17.6% "haven't got around to taking it out," 13.9% "never gave it a thought," and 3.2% "don't know." Still another 7% said they "don't believe in insurance," 2.1% "get free treatment," and 2.1% are "covered by veterans' benefits." Hence, of the people in Michigan not covered, 60.9% appear either to feel they do not need insurance or do not choose to purchase it. More pertinently, these factors are borne out by a Health Information Foundation study in 1957[6] which shows that less than 3% of aged persons interviewed had tried to buy health insurance and been turned down. More than one-fourth of the uninsured aged had never thought of getting such insurance, while again as many said they didn't want it.

Since 2.7 million of the aged are public welfare recipients, it would seem a conservative estimate that, of the 15 million persons age 65 and over, three to five million do not need or want voluntary health insurance protection. Hence, using a means of four million, a more proper denominator in any evaluation of the present extent of voluntary health insurance would be 11 million persons instead of 15 million. Employing this denominator, the adjusted estimate of the percentage of aged persons who need and want some health insurance protection, and who presently have such protection, would therefore be at least 51% as of March, 1957. As has been shown, the percentage for OASI beneficiaries would be higher.

In any consideration of the present degree of coverage of the aged, it is important to recognize that delayed reaction in the recent growth

of coverage among the population under age 65 and not yet retired is inherent, and that, therefore, the percentage of the aged covered in the future can safely be expected to increase. The voluntary health insurance movement is a development largely of the post-World War II period. At the beginning of 1947, for example, 30% of the population are estimated to have had some voluntary health insurance protection. A decade later this proportion had more than doubled to an estimated 70%.[10] Today 74% of the population under age 65 have some voluntary health insurance coverage. It would appear self-evident that the growth of coverage among persons under age 65 would bear some direct relationship to the number of the aged who will eventually be covered as those now under age 65 move into retirement. This is recognized in a recent study[7] of OASI beneficiaries made by the U. S. Department of Health, Education, and Welfare when, commenting on the generally higher rate of health insurance coverage among females, the study states that females were on the average younger than male beneficiaries and "as a result, relatively more were closer to the age when health insurance could have been attained."

It is noted that the percentage of all aged persons over age 70 having some form of voluntary health insurance in 1956 was exactly the same as the percentage of the entire population at all ages which was covered in 1946.

That insurance companies have been aware of the necessity for further accelerating these developments and for moving with resolve has been exemplified by a development of marked importance during the past year. In December, 1957, the Board of Directors of the Health Insurance Association of America, representing 265 insurance companies writing health insurance, appointed a special committee to give thorough consideration to the entire subject of the continuation of coverage. That committee, after eight months of study, made its recommendation to the Board of Directors on October 28, 1958. On December 8, 1958, at a special meeting of the Association, these recommendations were approved by the Association with only one dissenting note. The recommendations are that:

Insurers should minimize refusal to renew health insurance contracts solely because of deterioration of health after issuance.

Insurers should promptly make available to insurable adults policies which are guaranteed renewable for life.

Insurers should encourage the sale of permanent health care insurance where the need exists.

Insurers not now doing so, should promptly offer individual and family hospital, surgical and medical care coverages to persons now over age 65.

It is essential that adequate voluntary health insurance be available to broad classes of physically impaired people.

Insurers should develop and aggressively promote soundly financed group basis coverages that will continue after retirement.

Insurers should encourage the inclusion in group contracts the right to convert to an individual contract on termination of employment.

An important factor which will affect the coverage of the aged in future years is the increasing public awareness of the value of voluntary health insurance protection. Today the mechanism, the facility, by which the future aged might have health insurance protection is available. This is a fact too often overlooked.

However, insurance on a voluntary basis must be purchased as a matter of free choice, by individuals on their own behalf, or by employers, unions, or other types or organizations. The data to which previous reference has been made indicates that this is being done to an increasing degree. Nonetheless the degree of rapidity by which this will come about is directly affected by the degree to which individuals, labor unions or employers make their choices in relation to the available dollars and their other economic wants. From the standpoint of the individual who is not protected as a member of a group, choice must be made between health insurance and the many appealing, often highly advertised and installment purchased, consumer goods and services. With respect to the employer, health insurance has to compete not only with all the costs of production, including wages, but with other types of fringe benefits desired or demanded by employees. Employers in America have accepted their responsibility to their employees on an increasingly generous scale, to the extent where, today, fringe benefits average over 20% of payroll.[11] The employer is also faced with the problem of the extent to which his productive employees are willing to share in the provision of benefits to the retired employees. Since he has to compete with other employers in an open labor market for his employees this becomes an important factor. In making his choice the employer, in turn, is often governed by the contracts arrived at through collective bargaining.

Therefore, as individuals, labor unions and employers become increasingly cognizant of the importance of health insurance protection in the later years, and since the voluntary mechanism by which this protection might be provided now exists, it is reasonable to expect that the coverage of persons over age 65 in future

years will increase more rapidly than has been so in the past.

Since the number of aged owning voluntary health insurance has increased an average of 3% each year between 1952 and 1957, the following increases in this coverage, even without further development or progress, might be expected.

Year	% of Aged Needing and Wanting Protection Covered
1957	51%
1958	54%
1959	57%
1960	60%
1961	63%
1965	75%
1970	90%
1975	Over 90%

For OASI beneficiaries the figures would be larger since they commence with a greater percentage covered and since the rate of growth among these persons has been greater (3.5%).[7]

However, when reasonable allowance is made for the delayed reaction inherent in the recent growth of coverage of the population under age 65, for the increasing public awareness of the value of voluntary health insurance protection, and for the very recent developments being brought about by all types of insurers and plans in an endeavor to make voluntary health insurance available to all present and future retired persons who need and want such protection, it would follow that the potential rate of increase would exceed this base line and that the excess itself would increase for several years. Therefore, a conservative estimate of the potential of voluntary health insurance in assisting persons 65 years of age and older to meet the costs of hospital and medical care should, all other things being equal, approximate the following:

End of Year	Growth in % Covered	% of Aged Needing and Wanting Protection Covered
1958	4	55
1959	4.5	60
1960	5	65
1965	15	80
1970	Over 10%	Over 90%

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Lid Labels for Lead Paint

In order to assist the paint industry to comply fully with Baltimore's lead paint labeling ordinance, Ordinance No. 1504, approved June 9, 1958, a lid label regulation was adopted by the Commissioner of Health on April 27, 1959. The text of the new regulation is as follows:

Lid labels. No lid label bearing the warning as required by this ordinance shall be less than three inches in diameter for pint and larger size containers or less than one and one-half inches in diameter for cans smaller than pint size. In addition to the warning statement the lid label shall contain the name and address of the manufacturer. The word "warning" preceding the warning statement shall be of larger letters than the name and address of the manufacturer. The warning statement shall be as large as the lid label will permit. The lid label shall adhere firmly to the lid of the container.

The text of the label warning required by the Baltimore ordinance for all paint containing more than one percent of lead reads as follows:

WARNING—Contains Lead. Harmful if Eaten. Do not apply on any interior surfaces of a dwelling, or of a place used for the care of children, or on window sills, toys, cribs, or other furniture.

The city lead paint labeling ordinance was published in the August, 1958 issue of BALTIMORE HEALTH NEWS. Since 1931 a total of 744 Baltimore children have been poisoned by lead paint, usually during the teething age. Of these 123 have died. In 1958 there were 133 cases and 10 deaths.

—From *Baltimore Health News*, June-July, 1959.

CHALLENGES in Industrial Hygiene

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In the recent conference on man versus environment, an eminent industrial hygienist, Mr. Theodore F. Hatch, had this to say during the discussional period: "I have seen occupational health develop, in the field as well as in the laboratory, during the last quarter of a century from a time when it was essentially research. As findings of research became available, more and more people became occupied with application of this knowledge to the solution of occupational health problems. There has been great dependence on the use of principles and techniques which came out of this early research. Today we have engineers whose primary interest is directed toward details of the environment. Chemists are increasingly occupied with refinements of analytical methods and physicians with specific medical details. With this attention to details within our respective areas there is danger we will lose sight of the continuing need for team work which means more than bringing people of different disciplines together in one room."

I am also reminded of a well known public health authority who, in attempting to justify an expanded occupational health program in the Public Health Service, said to the Surgeon General: "There is much to learn about the mechanism of lead and benzol poisoning." Perhaps I am wrong, but I am of the opinion that if we in the Public Health Service don't attempt to determine what trends are taking place and pinpoint future problems of industrial hygiene, we would not be meeting our responsibility. I once told one of our junior engineers, "You must look over the mountain and leave the refinements of old problems to someone else." The refinements don't often save lives and generally are of academic interest only. I think Ted Hatch may also have had this in mind.

In assembling this panel, Dr. Yant and I asked each speaker to look over the mountain and not to report on present day research, but to bring up provocative points which could be more fully discussed and explored by the audience. We even told them that they didn't necessarily have to believe some of the concepts that they might toss out for your discussion. It is only through discussing tomorrow's problems today that we can begin to solve problems before we find ourselves in a quagmire. Some of the questions we would like to have you discuss and elaborate on are: (1) What are the problems in industrial hygiene today and tomorrow? (2) What resources are needed to solve these problems? and (3) What is the role of the government, labor and management and the academic institution in the solution of these problems?

Let me explain a few of my ideas as well as some of the things we have been thinking about in the Public Health Service. First, I think we are going to have to reorient our thinking. Industrial hygienists in the past have thought in terms of adapting the environment

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to the man. With nuclear energy, space flights and extended underwater voyages, we must start thinking in terms of adapting the man to the environment.

Even in industry, our machines are becoming increasingly more complex. As their functions continue to become more specialized and intricate, the jobs of the men who run them also become more specialized and intricate. As equipment designers devise more ingenious uses and techniques, the human faculties of perception, action, reaction and decision can be taxed to such an extent that it is no longer possible to take full advantage of the machine unless its control can be tailored to human capabilities. Machines must be manned by the average human being. Their operation must be governed by his capabilities under the influence of stress. Consequently, the average man's capabilities must be analyzed and measured and this information made available to the designer and engineer to enable their further progress. The engineer and the physicist in their designs of machines and artificial environments have already out-stripped medicine in its ability to determine the adaptability of man to scientific progress.

As industry becomes more mechanized, new concepts of the preplacement physical examination need to be incorporated. The physician will need to consider the psychologic and environmental conditions to be encountered during the operation of the machine as well as the physical requirements such as the sense organ involved, the discriminations to be made in perceptions, the over-all movement of the operator and the speed and accuracy requirements of the machine. In effect, the industrial hygienist will need to develop a detailed job capability analysis so that the physician may be furnished information on which to base his preplacement examination. A simple statement of whether the man is capable of performing heavy labor will no longer be sufficient.

Perhaps the most familiar of the emerging industrial health problems is that associated with radiation. The principal deterrent to the safe use of nuclear energy for peaceful purposes continues to be the lack of knowledge regarding the long-term effects of low levels of radiation. Research to determine the biochemical and cellular effects of large doses of radiation for short-time exposures has contributed much valuable information for public health purposes, but vital data are still lacking on the effects of protracted low exposures. Such information is basic to the development and expansion of the nuclear energy industry if protection of the health of the worker and the general population is to be a prime factor.

So much has been said and written on radiological health that there is little for me to say at this time. I should like to point out, however, that because the industrial hygiene profession was ill-prepared to handle radiological health problems, we have permitted that branch of industrial hygiene to slip away from us. I hope we don't make the same mistake with some of the future problems. Imagine the confusion if we had industrial hygenists, radiological health specialists, space health specialists, underwater health specialists and human engineering health specialists.

The need for basic toxicological information is also becoming more critical in industrial hygiene. The military use and application of the exotic fuels in itself could occupy the resources of most of our present toxicologic facilities. In contrast, in civilian life the number of new compounds being developed each year for industrial application either as an industrial intermediate or for consumer use is gigantic. The cost of screening these compounds and the resources needed for the job are tremendous. Many companies have within recent years started their own toxicologic laboratories. Yet the number of compounds which receive toxicologic evaluation before their general use is relatively small in comparison to the total. If this need is to be met, the question is then raised of who is going to do this work and how is this need going to be accomplished. Moreover, there are inherent difficulties in applying the findings of the toxicologist to the human being. In most cases, we have only been able to define those organs of the body which may be affected by toxic chemicals. In a few instances, highly toxic compounds have been overlooked because of this inability to translate from animal to man. In view of this expanding use of organic compounds, there needs to be in addition to toxicologic research closer observations of the worker and his environment by the physician and the industrial hygienist.

Aside from its importance as a screening tool, toxicology holds promise of becoming a valuable adjunct to the medical profession. Research in toxicology is leading us into the fundamentals of the pathologic reaction of the body to foreign substances. For example, some preliminary work performed in our toxicologic laboratories indicates that it may be possible to detect subtle changes in the body while they are still reversible and while therapy and prevention are possible. Other studies may lead to techniques which will permit the physician to detect disease conditions long before they have become recognizable by usual diagnostic criteria. Even so, several research needs yet remain unmet. One is for a study of the effects of combinations of potentially toxic materials as found

in the complex industrial environment. Another area which needs to be explored concerns the effect of exercise and temperature changes as well as alcohol and environmental factors on the toxicity of various agents.

In my opinion, one of the most important problems we have at the present time revolves about the determination of occupational factors in diseases generally considered to be nonoccupational in origin. When we realize that many of our compensation laws recognize only those diseases which were acknowledged as occupational in nature by English law of the mid-nineteenth century, we cannot help but suspect that our research has lagged behind the tremendous technicologic advances of recent years. Some court decisions have already reflected the possible inadequacy of the old concept of occupational diseases. These have been rulings that certain diseases which are generally not considered occupational in nature are compensable because they have either been produced or aggravated by the industrial environment. Thus, precedents have already been set for compensation awards for deaths due to heart conditions. There have been numerous awards for loss of hearing although we cannot yet differentiate between loss due to advancing age and factors in the nonindustrial and the industrial environment. Man, in pursuing his occupation, is afflicted with a wide variety of diseases, ranging from those which are known to be occupational to those in which the environment has little or no influence. Between these extremes, however, are certain diseases whose development and progression may be distinctly influenced by occupational factors.

Although most of the recognized occupational diseases have been investigated and preventive measures developed, no concentrated attempt has been made to determine the morbidity and mortality patterns of workers in various occupations. Our knowledge of the total effect of the working environment on health is dependent on a deeper probing into the health problems of various occupational groups. This supposition that the environment may have some influence in the development of chronic diseases accentuates the need for studies which focus on the individual rather than on his environment, an examination of his reactions to his work and an exploration of the far-reaching cumulative factors of a highly mechanized and technicologic society.

Aside from the few research needs which I have indicated, there is an equally important problem entailed in the collection and dissemination of industrial hygiene data. Keeping abreast of advances in industrial technology and the associated potential health hazards has always been a major problem in industrial hygiene. Our present industry completely overshadows in impact and scope any other period of industrial growth and accentuates the need for an industrial hygiene intelligence service. The usual public health intelligence, particularly data on morbidity and mortality, does not meet this need since the industrial health field involves numerous diseases, many of which are not recognized as clinical entities and few of which are reportable. This need will only be met by a mutual understanding among medicine, industry, labor and the academic institutions to report diseases, trends and problems to a designated agency which then would evaluate and report on the collected data. By bringing together piecemeal information from a variety of sources, it would be possible to predict answers to questions concerning new environmental factors and industrial processes in the causation of occupational diseases and worker health problems. We could then be better informed on new diseases arising in industry, the pathologic nature of such diseases, their prevalence, types of industry affected and the effectiveness of control measures. An intelligence service of this type would permit a better utilization of both governmental and private industrial health resources and professional skills. It would also result in better understanding of potential problems so that resources could be brought to bear before these problems became of nationwide significance.

There is need to maintain current files on activities of research organizations regarding the types of problems being investigated, the investigational techniques and primary findings. Such centralized data would serve to expedite research activities, provide a degree of coordination which is presently almost nonexistent, and assist in defining the areas of research needs. The beginning of an intelligence service of this type, which is a major prerequisite if we are to move ahead effectively in the industrial hygiene field, has already been started at the Occupational Health Field Headquarters of the Public Health Service.

In summary, it is apparent that industrial hygiene is on the threshold of a new and major challenge. If we are to meet these needs, there must be some looking over the mountain, new facilities must be developed, and above all, new people must be brought into the field. To meet the challenge, we need a better definition of tomorrow's problems. We need to know our resources and how they can best be utilized, as well as a definition of the role of government, national, state and local, private industry, labor, academic institutions and the various voluntary health agencies.

Industrial Hygiene Needs of the FUTURE

• GEORGE D. CLAYTON
Executive Secretary
American Industrial Hygiene Assn.

This discussion will be limited to future needs of industrial hygiene in terms of personnel, rather than attempt to cover the gamut of the field embraced in technology.

To determine the industrial hygiene personnel needs of the future, one must first look to the past and review the progress that has been made. The profession of industrial hygiene is very young in comparison to that of medicine and engineering. In fact, it is a unique profession which borders on both medicine and engineering, yet retains identity as a profession by virtue of the technique it employs in the intermingling of preventive skills with engineering and chemical knowledge. This comingling of the various professions created a new species—industrial hygienists—held together by a common interest, the health of the worker as influenced by his environment and the control and modification of that environment when necessary.

The year 1910 is significant in that it saw the embryo of what is now industrial hygiene at the first national conference on industrial diseases called in Chicago, where representatives of medicine, engineering and chemistry were commissioned to procure as much information as possible on the subject of industrial diseases, and to make recommendations of steps to take in fighting industrial disease.

Presented at the 1959 National Health Forum, March 17-19, Chicago, Illinois.

This same year, 1910, the U.S. Bureau of Mines (which was to gain a reputation, especially in the chemical field, as an impartial, qualified research institute, and later assisted in training industrial hygienists), was created. In rapid succession other organizations which influenced our profession came into existence, such as: 1913, the National Safety Council; 1914, Industrial Hygiene Section in the American Public Health Association; 1915, the United States Public Health Service "Division of Industrial Hygiene and Sanitation" and 1916, the American Association of Industrial Physicians and Surgeons was organized.

The increase in ill health and incidence of death which resulted from the rapid expansion of munitions and war materials industries during World War I, brought about a new awareness of the need for control of diseases incidental to an individual's occupation. In 1919 a new magazine was introduced, to bring together information on this subject, which was called *The Journal of Industrial Hygiene* and was later taken over by the American Medical Association. Since 1957 this has been published as the *A.M.A. Archives.*

In 1922 Harvard Medical School offered the first course of instruction in industrial hygiene leading to advanced degrees. Today degrees in industrial hygiene or occupational health may be obtained in at least 10 schools throughout the country.

Beginning in 1936, the United States Public Health Service was a great influence in the industrial hygiene field, having previously interested itself primarily in research work. In the period from 1936 through 1950, the Industrial Hygiene Division increased its services and personnel, and was a training ground for many of the present industrial hygienists. In 1938, the American Conference of Governmental Industrial Hygienists was organized to provide a forum for the discussion of problems and experiences among industrial hygienists in government.

In 1939, the year the American Medical Association held its first Congress on Industrial Health, the American Industrial Hygiene Association was organized. This Association became the center for the development of the profession of industrial hygiene, as it worked to increase the knowledge of industrial hygiene, disseminating technical information in the basic sciences as it applies to industrial hygiene, and promoting the study and control of environmental factors which affect the health and well being of the industrial worker. This Association began publication in 1946 of its own magazine which it called the *American Industrial Hygiene Association Quarterly*, which was soon accepted as, and continues to be, the leading source of information in the industrial hygiene field. In 1958 it was expanded to six issues a year and was renamed the *Journal*.

Most professional industrial hygienists who are qualified by virtue of years of experience and competence in the field, are members of this Association, therefore the study of the growth of industrial hygiene parallels the growth of this Association. The efforts of AIHA to advance its field have been staunchly supported by the work of the American Standards Association and the Industrial Hygiene Foundation.

The growth of AIHA membership was moderate from 1940 to about 1946 when there were 370 members, with a more rapid increase, to over 1,000 members, from 1946 to the present.

Table I gives the ratio of professional industrial hygienists (in AIHA) to the number of employees in selected industries. Data for this table and Table II were obtained from the U. S. Population Census figures of 1950, "Employees by Industry Group," and the U.S. Census Industry Survey of 1956, and the current membership statistics of AIHA.

Table II shows the number of employees in various industries, and the number of industrial hygienists (AIHA members) in each industry, if any.

Table III shows the distribution of AIHA industrial hygienists in the Federal, state and city governments.

The United States Public Health Service, which in the past had a well established Division of Industrial Hygiene and during the 1940's had a very successful program, has apparently shown a declining interest in industrial hygiene as evidenced by the lack of financial support with a subsequent decrease in the number of personnel, having at the present time less than one-fourth the personnel it had during the 1940's. The recently oft-expressed opinion is that this is a deplorable situation.

Fortunately, the Service has retained a central corps of competent research and consultative personnel, and with adequate budget, could again conduct a program of the magnitude required at the Federal level.

The larger industries are in a position to establish and maintain industrial hygiene programs. However, there are numerous smaller industries which cannot maintain an industrial hygiene program and derive its benefits, without recourse to state and local governments for technical assistance.

On the state level, prior to 1936 only eight of the states conducted industrial hygiene activities. Today, we find that 14 states do *not* have industrial hygiene activities, and these are, for the most part, the nonindustrialized states such as Alaska, Arizona, Arkansas, Nebraska, etc.

TABLE I.
RATIO OF PROFESSIONAL INDUSTRIAL HYGIENISTS (IN AIHA) TO NUMBER OF EMPLOYEES BY SELECTED INDUSTRIES

Classification	Number of Establishments	Total No. Employed	No. of Ind. Hyg.	Ratio of Ind. Hyg. to Employees
Manufacturing Durable Goods				
Electrical machinery	5,663	789,300	52	1/15,179
Fabricated metal products	22,682	836,651	41	1/20,406
Transportation equipment	5,430	1,347,225	57	1/23,636
Other durable goods				
Leather and leather products	4,712		1	
Stone, clay and glass products	10,953	1,133,017	8	1/26,977
Instruments and related products	3,267		33	
Primary metal products	5,833	1,166,782	27	1/43,214
Machinery (except electrical)	22,059	1,294,922	27	1/47,960
Manufacturing Nondurable Goods				
Chemical, drug and allied products	10,894	658,931	128	1/5,148
Other nondurable goods				
Paper and paper products	4,919		3	
Petroleum and coal products	1,293	1,481,590	44	1/25,545
Rubber products	1,396		11	
Printing, publishing and allied industries	32,710	853,239	1	1/853,239
Miscellaneous Manufacturing (not otherwise classified)	17,072	122,260	8	1/15,283
Railroad and railway express services		1,385,684	3	1/461,895
Insurance Companies (casualty)	500		55	
Laboratories			79	
Atomic Energy (private indus. & govt.)			32	
Universities and Colleges	873	2,067,689	106	1/19,507

TABLE II.
NUMBER OF EMPLOYEES IN VARIOUS INDUSTRIES AND NUMBER OF INDUSTRIAL HYGIENISTS (AIHA) IN EACH INDUSTRY

Industry Group	Total Number Employed	Number of Industrial Hygienists
Agriculture, forestry, fisheries	7,005,403	0
Agriculture	6,884,970	0
Forestry and fisheries	120,433	0
Mining	929,152	0
Construction	3,439,924	0
Manufacturing	14,575,692	441
Durable Goods	7,756,922	246
Furniture, lumber and wood products	1,189,025	0
Primary metal industries	1,166,782	27
Fabricated metal industries	836,651	41
Machinery (except electrical)	1,294,922	27
Electrical machinery, equipment and supplies	789,300	52
Motor vehicles and equipment	868,683	
Transportation equipment (except motor vehicles)	478,542	57
Other durable goods	1,133,017	42
Nondurable Goods	6,696,510	187
Food and kindred products	1,399,070	0
Textile mill products	1,240,238	0
Apparel and other fabricated textile products	1,063,442	0
Printing, publishing and allied industries	853,239	1
Chemical and allied products	658,931	128
Other nondurable goods	1,481,590	58
Not specified manufacturing industries	122,260	8
Transportation, communications and other public utilities	4,368,302	3
Transportation	2,940,663	3
Railroads and railway express	1,385,684	3
Trucking services and warehousing	700,682	0
Other transportation	854,297	0
Telecommunication	645,732	0
Utilities and sanitary services	781,907	0
Wholesale and Retail Trade	10,547,569	0
Wholesale trade	1,975,817	0
Retail trade	8,571,752	0
Food and dairy product stores and milk retailing	1,717,495	0
Eating and drinking places	1,685,499	0
Other retail trade	5,168,758	0
Finance, insurance and real estate	1,916,220	55
Business and repair services	1,411,357	0
Business services	458,268	0
Repair services	953,089	0
Personal Services	3,488,551	0
Private households	1,634,695	0
Hotels and lodging places	523,191	0
Other personal services	1,330,665	0
Entertainment and recreation services	554,029	0
Professional and related services	4,674,548	217
Medical and other health services	1,629,320	79
Educational services	2,067,698	106
Other professional and related services	977,530	32

TABLE III.
PROFESSIONAL INDUSTRIAL HYGIENISTS (IN AIHA) EMPLOYED IN GOVERNMENT

Classification	Number of Ind. Hyg.
Federal Government	123
U. S. Public Health Service	34
Armed Forces	70
Other	19
State Government	88
City and County Government	30

Of the 35 states which have a program, eight do not have representation in AIHA.

In the cities of approximately a million and over population, industrial hygiene programs are conducted only in Baltimore, Detroit, Los Angeles and Philadelphia. As far as could be determined, neither Boston, Chicago or New York City have a department, bureau or section of industrial hygiene. In the cities of lesser population, we find industrial hygiene programs in Cleveland, Houston, Minneapolis and St. Louis, and these, along with smaller cities in California and elsewhere, make a total of approximately 30 cities with industrial hygiene programs. There is therefore an evident need for these programs, not only in the medium-size industrial cities, but in our several large cities which lack the program.

It is recognized that not all industrial hygienists belong to AIHA, since there is a three year experience requirement, however the majority of professional men in this field are members of the association.

In 1940 there was only one industrial hygienist for every 300,000 employed workers. The years of World War II gave great impetus to the profession so that by the end of the war, there was one industrial hygienist for every 150,000 employed workers. The profession had proved itself to industry during those trying war years, and the material benefits to be derived by both employee and employer were recognized. By the year 1957 there was one industrial hygienist for every 64,500 employed workers. Projecting this curve into the future requires somewhat of a crystal ball. However, it is not unreasonable to believe that a desirable goal, one which should give most of the working population the benefits of industrial hygiene, is one industrial hygienist for every 24,000 employed workers. It is estimated that in 1975 there will be an employment population of 93,700,000. (Figure obtained from data made available from U.A.W.) This means we will need a minimum of 3,800 industrial hygienists, or an increase of 2,700, or more than 200%, over the present number of recognized professional hygienists. Considering that we will require 160 more industrial hygienists each year for the next 16 years, the question arises whether there are sufficient school facilities to provide the adequate training to equip men for this profession.

At one time the only training obtainable was in the school of experience and hard knocks for either the engineer, chemist or physician who had taken an interest in this new field. Today many schools give excellent training in industrial hygiene: the University of California at Berkeley, University of Cincinnati, Harvard School of Public Health, Johns Hopkins University, University of Minnesota, University of Michigan at Ann Arbor, New York University, University of North Carolina, University of

Pittsburgh and Wayne State University in Detroit, Michigan. Of this group, four schools confer Masters of Science in Industrial Hygiene, while the others use wordage such as "Master in Public Health" or "Master in Industrial Health." The preferred degree is the one which can be obtained in Industrial Hygiene. With regard to doctorates in industrial hygiene, the choice is limited, as only the University of Pittsburgh offers the Doctor of Science in Hygiene. The University of Cincinnati offers Doctor of Science in Industrial Health. Present facilities are adequate to fill present needs; however, as the growth rate continues, expanded educational facilities will be required to adequately train the increasing number of competent men required in this expanding field.

What does the future hold for the industrial hygienists? It is without a doubt one of the most challenging, most interesting professions in the universe. I say in the "universe" because today when you pick up a newspaper or technical magazine you read that man is going to be on the moon by 1965, or he will be planning a trip to Mars shortly. Man, wherever he goes, must have the proper atmosphere in which to live, or he will die. It is the application of the principle of industrial hygiene which will provide the kind of environment which will allow people to live on other planets.

And, getting back to earth, there are the newer fields of atomic energy and electronics which have become increasingly important to us not only in the field of defense but in our every day living, which will introduce new problems of environmental control. More than 4,000 new chemicals are being created each year, many of which will be toxic and find their way into common usage, and these add additional dangers which will require precautionary measures. Even the farmer, once envied for the expanse of pure air and open fields around him, cannot be overlooked by the industrial hygienist. The insecticides and herbacides used by the farmer are frequently toxic and require control.

In summary, we have made great strides in our profession, especially in the period of 1946 to the present. The leading schools of the country have responded to the demand for men of this new profession and have provided training facilities. Since the trend indicates that more men of this relatively new field will be required in the next 15 years, we look to the schools for amplification of their programs to supply the required trained manpower.

Many of the larger industries have realized the value of our profession and are employing increasing numbers each year.

The Federal government has shown a lack of interest in the health of the industrial worker and it is recommended that a strong, positive program at the federal level should again be developed. It is recommended that the Surgeon General reaffirm the interest of the Public Health Service in the health of the industrial worker and implement this interest with the necessary financial support.

More state and local governments must take an active interest in the health of the industrial worker by providing the necessary trained industrial hygiene staffs. It must be kept in mind that the majority of workers are employed in small plants where it is impossible for such work places to have their own industrial hygienist. The state and local governments must provide this vital service to these small plants.

Yes, the profession of industrial hygiene is as interesting as the future of our country. Its needs are commensurate to the growth and expansion of the country's industries as well as recognition of the benefits to be derived through the practice of industrial hygiene.

Sick Kids

The extent to which acute illnesses and injuries — including everything from chickenpox and sore throats to appendicitis and broken legs — are concentrated among children is documented in a report by the Public Health Service's National Health Survey. The report discloses that during the year ending June 30, 1958, young children suffered acute illnesses with twice the frequency of adults. The incidence rates for acute illnesses involving either restricted activity or medical attention ranged from a high of 4.0 occurrences a year for children under five to a low of 2.0 occurrences for adults over 25.

On the other hand, adults over 25 averaged almost twice as many days of restricted activity from illness or injury as persons under 25. For different age groups under 25, the days of restricted activity per person per year ranged from 13.2 to 16.4, as compared with 24.1 days for adults over 25.

Home accidents among children under 15 years of age were the chief cause of injuries restricting activity or requiring medical attention. They were an important cause, along with motor vehicle and work accidents, of restricted activity in the 15-24 age group.

The RAMAZZINIANS, 1959

Convened at Montebello, Quebec

More than 200 years ago the King of France established a number of land grants for his nobles along the Ottawa River, in the area between Montreal and Ottawa. These were the famous seigneuries of Canada, and the noble recipients became the Seigneurs. Since water was the only means of transportation, by design the seigneuries were narrow to provide many water frontages, but were quite deep. The usual seigneurie consisted of some 250 square miles but the water front was seldom more than 15 miles. Over the years there were many seigneurs at Montebello, from Bishop Laval who received the first grant in 1674, all contributing to a fabulous history; but perhaps the most famous was the honorable Louis Joseph Papineau who in 1804 acquired part of that original seigneurie. Papineau was one of the leaders of the ill fated Canadian rebellion. In 1850 he built the famous Papineau Manor at Montebello, overlooking the Ottawa River. This Manor was furnished with all of the riches of France much of which remains intact and in fact in daily use by favored groups privileged to conduct their assemblies within its elegant rooms. In the course of years the Manor house became part of the later constructed, spacious Seigniory Club for the pleasure of its hundreds of members and with the impatience of a long waiting list of would be members. To be eligible the applicant must be a land owner in Canada.

Life at the Seigniory Club Centers about the Massive Six-faced Fireplace.

Here the Ramazzini Society gathered for its 1959 assembly, with Dr. Harvey Cruickshank and

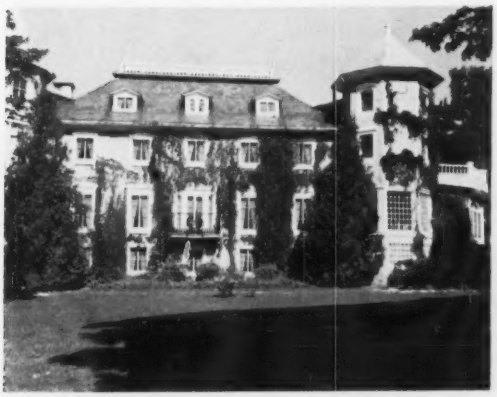
Dr. Fred Parney as the servants for the year. The Ramazzinians had as their headquarters the old Papineau Manor and conducted its assemblies and consumed some of its meals in the midst of the splendor of wood carvings, oil paintings, chandeliers and candelabra characteristic of both Canada two centuries ago and France of far removed days. In this historic setting the activities of the Ramazzini Society chiefly centered about its own history now in printed form and to the credit of the current servants. The annual Ramazzini oration was presented by Dr. Carey P. McCord. One of the Ramazzini Society assembly periods was conducted in Ottawa and chiefly related to inspections of Canada's crime detection laboratories.

The servants for the year 1960 are: Drs. Earle A. Irvin, Seward E. Miller and Arthur J. Vorwald, all of the Detroit, Michigan, area.

The current Ramazzini Society members are: Elston L. Belknap, Harvey W. Cruickshank, Warren F. Draper, Allan J. Fleming, Leonard Greenburg, L. E. Hamlin, E. A. Irvin, Dudley A. Irwin, R. T. Johnstone, A. G. Kammer, R. A. Kehoe, Harley L. Krieger, D. John Lauer, Robert T. Legge, Christopher R. Leggo, Willard Machle, J. F. McCahan, William J. McConnell, Carey P. McCord, (Grand Emeritus member) Lemuel C. McGee, Seward E. Miller, Robert B. O'Connor, Fred S. Parney, Frank Princi, O. A. Sander, William P. Shepard, J. H. Sterner, Harry E. Tebrock, Arthur J. Vorwald, George Wilkins and William P. Yant, (associate member).

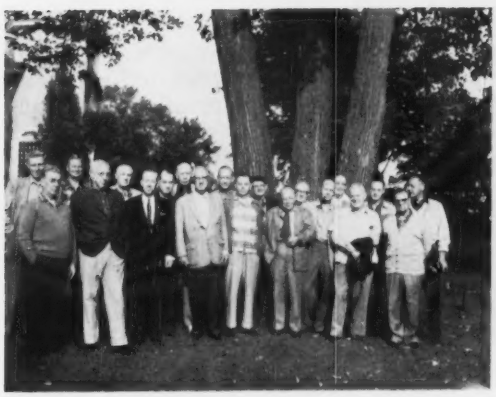
The membership of the Ramazzini Society traditionally is limited to 31. The two vacancies appearing in the listing above will be filled from among the many nominations made.

The avowed purpose of the Ramazzini Society is to pay homage to Bernardino Ramazzini, the patron saint of occupational health. At Montebello a full measure of homage was extended to the revered old master.



The Papineau Manor House — the Ramazzini Headquarters for 1959.

Dr. Fred Parney and Dr. Harvey Cruickshank — the Ramazzini Servants for 1959.



The Ramazzinians Assembled, 1959.

Ramazzini Prototypes. Jerry McCahan, M.D., L. E. Hamlin, M.D., and Oscar Sander, M.D.

In the early 1900's, when industrial medicine was more a name than an entity, many who had occasion to mention it were so unsure of its meaning that they quite believed it must be part of something else. Public health was the favorite among the probable identifications. Persuasive toward that choice was the growing interest of health agencies in occupational diseases, together with a certain sense of insecurity on the part of the practitioners of industrial medicine because of the indifference, often the disapprobation, sometimes even the condemnation, of organized medicine. It may have been that considerations such as these had something to do with the proposal that Doctor Joseph Schereschewsky, of the U. S. Public Health Service, be elected first president of the association of industrial physicians when it was organized in 1916. The proposal set up an argument. Those against it urged that its adoption would be an admission of weakness, a seeking for shelter, a concession to the very status they were trying to avoid — almost as if the signers of the Declaration of Independence had turned for a leader to the House of Lords. Those for it replied that, even so, the concession — more

Profiles in Occupational Health

Royd Ray Sayers, M.D.

apparent than real — might be good strategy. Doctor Schereschewsky was elected. His two-year term was undistinguished. He was followed, in succession, by Doctors Harry Mock and Otto Geier, both even then looked up to as industrial medicine's outstanding individualists.

The historian has a certain advantage in that he can ascribe meanings to moves so long away that none survives to counter his assertions. But if he is objective, he will interpret in terms of subsequent events. In those terms it now seems that the forming of the association itself — the first self-starting concerted action of the physicians in industry — announced to all and sundry that the industrial physician was "his own man"; that he and his fellows had faith in themselves and in the future of the service to which they were dedicated; and that, insofar as any group, organization, or agency, governmental or otherwise, was concerned they were willing and ready —and, moreover, considered themselves fully able — to live, and work, *with* but *not under*. And it further appears that the selection of Doctor Schereschewsky as their first president was not a conciliation, but well might have been a tactful invitation to the Public Health Service to live, and work, *with* — to advise, and assist, and cooperate, especially in the sphere of the many problems that had an occupational denominator in a number of employment situations. At any rate the invitation was accepted, and the sequel was the still-continuing cooperation that has been a succession of brilliant contributions to the improvement of health conditions in the work environment.

Meanwhile, all unknowing, the men who were to be the protagonists of the sequel and infuse it with the climate of success had been training for their parts in it. This is the story of one of those men — one of the few who reached the pinnacle of distinction in industrial medicine by way of a career in public health and without ever having been employed as an industrial physician.

This man's story begins on a farm near Crothersville, a little town of about 1,200, in southern Indiana. There, in October, 1885, he was born to Smith and Ida May (Lewis) Sayers, and, for no reason that he could discover, was christened Royd Ray. His father's ancestry traces back through pre-Revolutionary days in Virginia to England; his mother's, via the Jamestown settlement in 1619, to Scotland and Wales. Smith Sayers was a jeweler, and Royd Ray's earliest job was helping his father around the store during periods of vacation from the Crothersville schools. By the time he finished high school he had pretty well made up his mind to study medicine and become a specialist in pediatrics. At nearby Bloomington he entered Indiana University, but finding no premedical course, and having been made an assistant in the chemistry laboratory, he temporarily put aside his medical ambition, took all the chemistry there was, and did so well in it that when he graduated A.B. and A.M. in 1907 he was appointed electrochemist for the United States Mining, Smelting & Refining Company at Gisella (East Chicago), Indiana. Toward the end of 1907, at age 22, he went to Gould Storage Battery Company at Depew, New York, as Chief Chemist. In 1910, with encouragement from the Company management, he began his deferred medical studies at University of Buffalo School of Medicine. He continued with Gould as Chief Chemist until, in 1911, he was appointed Professor of Electrochemistry and Physical Chemistry at the University, where he taught these subjects for the next several years. He graduated M.D. in 1914, after a year's internship at Marine Hospital, Buffalo, took the Public Health Service examination, and, in January, 1915, was commissioned Assistant Surgeon and assigned to Ellis Island, New York, to the contagious disease ward in the 800-bed hospital for immigrant children, on Island Number Three. This was as close as he came to being a pediatrician. Among his next assignments were a tour of sea duty as Public Health Officer on the Coast Guard cutter "Comanche," and some studies involving sanitation and the prevention of infectious diseases in rural areas.

In 1917, because of his background in chemistry, Doctor Sayers was detailed to the United States Bureau of Mines. This Bureau had come into being in 1910. Its interest, limited by the Act which created it, was not "in the welfare of the individual worker, but in the general conditions which affect the welfare of groups of workers." These general conditions involved "the nature, causes, and prevention of accidents and the improvement of conditions, methods, and equipment with special reference to health, safety, and prevention." Within the range of intendment were all things pertaining to mining: explosives, explosions, gases, dusts, rescue apparatus, first aid, safety measures and devices, ventilation, humidity, occupational diseases and whatever else developed any syndrome of exigency. Additional were the special problems that appeared from time to time.

Doctor Sayer's first assignment in the Bureau of Mines was to work with Doctor Anthony J. Lanza, then Chief Surgeon of the Bureau, in certain mining investigations. This precipitated him into a succession of problems which were to engage him for many years. For some time the mining industry and the Public Health Service had been concerned with the unusual prevalence of tuberculosis among the lead and zinc miners in Missouri's Joplin district, and particularly with an accompanying and apparently underlying occupational disease known locally as "miner's con." In 1914 the investigations the Public Health Service had been conducting in this area were taken over by the Bureau of Mines and continued under Doctor Lanza. Out of this work came the first reports that were to clarify what was later to be identified as silicosis. In 1917 the mining investigations were transferred to the region centering in Butte, Montana, where, in extended scope, they covered ventilation, dust, and the effects of heat and humidity, together with underground conditions in general. Doctor Sayers went with Doctor Lanza to Butte. Interestingly, it was at Doctor Lanza's home in Butte that he first met Miss Edna Linnen who, in 1923, was to become Mrs. Sayers. In only a short time the entry of the United States into World War I interrupted the mining studies, and Doctor Lanza was appointed head of the Division of Industrial Hygiene, U. S. Public Health Service, which was concerned with working conditions in munition plants, while Doctor Sayers, having succeeded Doctor Lanza as Chief Surgeon, and having also been appointed Chief of the Health and Safety Section, of the Bureau of Mines, was detailed to the Chemical Warfare Center, Washington, D. C. When the Army took over the Center in July, 1918, he was sent to New England and then to Georgia on studies of the influenza that was sweeping the country. Recalled to Washington, he was sent to Missouri, Kansas and Oklahoma, at the request of the health officers of those states, for an investigation of lead poisoning. This was followed by studies of lead poisoning in most of the lead smelters of the United States. In the Joplin area his work also included investigations in sanitation, particularly in connection with food handling. In the latter part of 1919 he took time out for a postgraduate

course at Rush Medical School, Chicago.

Thus begun, this first period of Doctor Sayer's identification with the Bureau of Mines was to continue, even more strenuously, and, to him, more absorbingly, until 1933. In that year most of the investigations not dealing with mining were transferred to the Public Health Service, and Doctor Sayers, as Chief Surgeon, went with them, becoming Medical Officer in charge of the Office of Industrial Hygiene and Sanitation. Seven years later, in 1940, he was again detailed to the Bureau of Mines, this time as its Director. In the late 40's he was lent by the Public Health Service to John L. Lewis to help in the organization of a medical care plan for the coal miners, and for several years he was Chairman of the Medical Advisory Board, United Mine Workers of America Welfare and Retirement Fund. When he left the Public Health Service, at his own retirement age, he joined the Baltimore City Health Department, where he is now Senior Medical Supervisor, Occupational Diseases.

A compilation of biographical data published in 1948 says of Doctor Sayers: "Distinguished for the variety and scope of his studies and investigations in industrial hygiene, and his initiative and leadership in the evolution of important results." That is a summary of two phases of this man's genius — so mingled in his work they seemed as one, but separable in review. First, therefore, his "studies and investigations in industrial hygiene." Lacking any log of the problems that came to him, one finds in his writings and organization affiliations more than enough to prove them wide indeed in range and variation, world-wide in compass, industry-wide in technical significance. His published reports began in 1920, with an article on first aid. In his next 100 contributions to the literature of industrial medicine and hygiene, through 1941, there were two dozen journal articles, about the same number of Public Health bulletins and reports, and 53 Bureau of Mines publications — among them his Technical Papers on mine rescue standards (1921); silicosis among miners (1925); determination of carbon monoxide in blood and air (1927); and silicosis and tuberculosis among miners of the Tri-State District of Oklahoma, Kansas and Missouri for the years 1928 and 1929 (1933). Some of his many subjects were dealt with numerous times and in various relations. Carbon monoxide, mine dusts and gases, silicosis, tuberculosis and pulmonary diseases, ventilation, sanitation, temperatures and humidities, lead poisoning, helium and compressed air workers, accidents and injuries, explosions, first aid, mine rescue apparatus, anesthesia, fatigue and prevention of illness led as report topics. Carbon monoxide was his subject 18 times; silicosis and tuberculosis, 13; mine dusts and gases, 12; and on to twice-studied fatigue. Among his one-article subjects were food fumigation, radium, ketone vapors, metal fume fever and various toxicities — mercury, lead, ethyl gasoline, refrigerants, methanol, hydrogen sulphide, methyl chloride. But these were not all. It is of record that, in 1941 at Pittsburgh, he was given industrial medicine's highest honor, the Knudsen Award, "for any of many contributions made, but specifically emphasizing studies in absenteeism."

High lights of special interest sparked the years. One was a difficulty that was brought to the Bureau of Mines in the early 1920's — how to ventilate the proposed Holland Vehicular Tunnel under the Hudson River between New York City and New Jersey. Some 10 years previously the Bureau of Mines had acquired a tract of land near Bruceton, a town of about 300 a few miles south of Pittsburgh, and there, in a 2,000 foot twin tunnel driven into a coal bed, had set up an experimental station to study coal dusts and explosions. With Doctor Sayers in charge of the medical aspects, a group of chemists, physicists and engineers converted this tunnel into a quarter-size prototype of the Hudson River project, and, after months of trials and tests with four systems of ventilation which they developed, they contrived the one with the virtually taintless atmosphere that long has been matter of course to motorists using the tunnel.

Also in the 1920's, Doctor Sayers, together with other Bureau scientists and a university professor, began experimenting with oxygen-helium mixtures to minimize the hazards of caisson disease. A biographical sketch of Doctor Sayers some years later says of this: "Successful trial tests were held and the Navy authorized a more thorough study, assigning eight experienced divers to the Central Experimental Station of the Bureau at Pittsburgh. While the investigative work was in progress the Submarine-51 sank off Newport, Rhode Island, after an accident. The Navy divers at Pittsburgh were rushed to the scene and here the oxygen-helium mixture proved that it henceforth would play an essential part in Navy diving work. During the salvaging of the S-51, the decompression chamber for the divers held an emergency tank of a synthetic atmosphere of helium and oxygen, attached to a breathing apparatus. When a diver developed the bends and decompression did not correct the condition with satisfactory promptness, the diver donned the breathing apparatus and inhaled the helium-oxygen mixture. The nitrogen was replaced by the helium and the symptoms were relieved." The sketch continues:

"Doctor Sayers has maintained deep interest in other medical applications of helium. He has stimulated research in the use of helium to render certain anesthetics noninflammable and thus prevent explosions or fires in operating rooms. These studies were undertaken jointly by the Bureau of Mines, St. Francis Hospital, Pittsburgh, and a committee directed by the Department of Anesthesia and Industrial Hygine, School of Medicine, University of Pittsburgh. In 1938 and 1939 Doctor Sayers was engaged in a field study of compressed air illness among workers driving the Queens-Midtown Tunnel in New York City. A by-product of this study was research in the prevention of tubal and sinus block by the application of helium-oxygen mixtures. Using an apparatus constructed by the Bureau of Mines, Doctor Sayers and his co-workers treated 84 cases with helium-oxygen mixtures and 82 were relieved of their discomfort, re-entered the pressure chamber, and continued their work."

In 1922 Doctor Sayers became a member of the Advisory Committee on Industrial Hygiene, International Labour Office, Geneva, Switzerland. He continued this membership for many years, and was a contributor to the ILO publications on occupational diseases. In 1923 he went with the United States Delegation to the Pan-Pacific Science Congress in Melbourne and Sydney, Australia, serving as Chairman of the Section on Hygiene among Workers (particularly miners). He studied the Australian mines, and came home by way of Africa, stopping off in New Zealand to visit the mines there. In Africa, as later in Europe, much of his sightseeing was done underground, as he sought opportunity to study mine operations and methods everywhere and of every kind. When the Pan-Pacific Science Congress met in San Francisco in 1939, he was again Chairman of the Section on Hygiene among Workers (particularly miners). In 1925, at the Fourth International Congress on Industrial Accidents and Occupational Diseases, meeting in Amsterdam, he read a paper on "Health Hazards from the Use of Tetraethyl Lead." For some years he was a member of the United States Delegation to the International Congress, and at the 1938 meeting, in Frankfort, Germany, the last meeting prior to World War II, he was chairman of the United States Delegation.

Doctor Sayer's "initiative and leadership in the evolution of important results" are reflected in his relations with the more than 30 technical and professional organizations of which, at some time in his career, he was a member. Early in his work with the Public Health Service it had become apparent that his interest in industrial hygiene was pervaded with a scientific idealism almost evangelical. He comprehended, as did few, the many professional and vocational disciplines it involved. And he sought from them more than merely acquiescence; he wanted their cooperation, positively expressed. Usually he got it; though often he had to show the willing how to give it, and the unaroused how much their help was needed. He did this by working among them, and with them; his "activities" were all that the term implied. A 1936 listing of these activities discloses that he was then, or had been, Chairman of a Committee on Industrial Hygiene, International Union of Chemistry; Chairman of the Section on Preventive and Industrial Medicine and Public Health, American Medical Association; and member of the Governing Board of the American Public Health Association, Chairman of its Industrial Hygiene Section, and Chairman of that Section's Committee on Pneumonoconiosis. He was a member of the Bituminous Research Planning Committee, American Institute of Mining and Metallurgical Engineers; the Committee on Health and Safety in Mines, American Society of Mining and Metallurgical Engineers; the Medical Committee, International Association of Industrial Accident Boards and Commissions; the Committee on Research, and the Technical Advisory Committee on Air Conditions and Their Relation to Living Comfort, American Society of Heating and Ventilating Engineers; the Approved Requirements Committee, and the General Specifications Committee, American Gas Association; the Advisory Committee to Cooperate with the Division of Labor Standards, U. S. Department of Labor; and the Technical Advisory Committee on Air Conditions in Relation to Comfort and Health, Harvard School of Public Health. In the American Standards Association he was a member of eight committees: the Safety Codes Correlating Committee; the Committee on Fundamentals of Ventilation, and its Subcommittee on Code; the Sectional Committee on Paper and Pulp Safety Code; the Mining Standardization Correlating Committee; the Committee on Construction Safety Code, and its Subcommittee on Excavating, Foundations, Blasting, and Compressed Air Work; and the Subcommittee on Fundamentals, of the Exhaust Code Committee. The Conference of State and Provincial Health Authorities of North America had a Committee on Industrial Hygiene; he was its Consultant on Industrial Hygiene. Also he was Recorder of the U. S. Public Health Service for the Consideration of Questions Relating to Fumigation; a member of the National Committee on Health and Safety, Boy Scouts of America, and its Subcommittee on First Aid and Water Safety; and a member of the Subcommittee on the Fire Protection

Code for Blowers and Exhaust Systems, of the National Fire Protection Code. Among his other affiliations he was Chairman of the Hero Awards Committee of the Joseph A. Holmes Safety Association; and a member of the Association of Anesthetists of the United States and Canada, the Personnel Research Federation, the Association of Military Surgeons of the United States, the American Association for the Advancement of Science, the Mining Association of Montana, the Washington Biophysical Institute, the National Conference of Governmental Industrial Hygienists, and the Industrial Hygiene Foundation, Pittsburgh. And "Who's Who in America" adds: "Lecturer on Industrial Medicine, New York University; Professorial Lecturer on Industrial Hygiene, George Washington University; Committee on Commercial Policy, Department of State, and member, Interdepartmental Committee on Safety, and numerous other Committees." In 1936 he was Chairman of the Committee for the Prevention of Silicosis Through Medical Control, established by the U. S. Secretary of Labor.

In only about a fourth of the contributions to the literature with which this man is associated was he sole author. In the others his coauthors numbered from one to a dozen. Rarely was he senior author. In all but one of his publications he was identified merely as "R. R. Sayers." The exception was a journal article where there was a "Dr." in front of his name. This may have been a reflection of Public Health Service policy or personal modesty, but whether one or the other it was as he would have it. He was a team worker. He saw industrial medicine as multiprofessional, and his continual enlistment of chemists, physicists, engineers, toxicologists and research experts in the solving of problems arising in the industrial environment had a cumulative effect in educating others to see it the same way. Prior to World War I the term "industrial hygiene" was somewhat nebulous in significance. It began to assume its now well understood meaning at about the time Doctor Lanza, newly appointed head of the USPHS Department of Industrial Hygiene which was concerned with working conditions in munitions plants, took with him from the Bureau of Mines the concept of the scope of industrial hygiene as it was set forth in the Act creating the Bureau: "the nature, causes, and prevention of accidents and the improvement of conditions, methods, and equipment with special reference to health, safety, and prevention." For a while, however, the new practice had few practitioners. These emerged gradually. At first they were "governmental"; acceptance of the industry-employed hygienist was slow in gaining momentum. Even as recently as the mid-1930's, at a Chicago conference on air conditioning one of the speakers told the rather small assembly: "Practically all the industrial hygienists in industry are here in this room." But Doctor Sayer's repeated exemplifications of the team approach had been making a deep impression in many quarters, and when he left the Office of Industrial Hygiene and Sanitation to become Director of the Bureau of Mines in 1940, the hygienists in industry — chemists, physicists, engineers, toxicologists, researchers, merging their skills toward the goal of health, safety and prevention in the work environment — had so increased in number and were so widely established in the important places of work throughout the country that they were preparing to launch their own association.

But for all his devotion to industrial hygiene and his long identification with its development, Royd Ray Sayers was ever the physician. His philosophy of industrial hygiene could not accept the limitation that its proper concern was with the welfare of the group rather than the individual. To him the group was never separate from any of those who composed it; his interest in the group was the sum total of his interest in every member of it; and the sciences he gathered about him had meaning chiefly as they kept before them the picture he carried in his mind and heart of the individual worker as a healthy human being in a healthy environment. And so — as physicians attend to the business of physicians — he joined the industrial physicians' association where, among the pioneers, he found himself at home in the "goodly company" of his own kind. He served as Director of the association, 1934-36; and in 1937 he became its sixteenth President — the second Public Health Service official to hold that office. This time there was no hint of strategy in the selection. The industrial physicians chose him because they wanted him, and in so doing they showed their appreciation of nearly a quarter-century of cooperation on the part of the Public Health Service — a cooperation that glowed with the warmth and color of a vivid personality no whit impressed by form or protocol, and so unmindful of self that the framed injunction on his office wall might well have been, to paraphrase the Persian: "Do the work, and let the credit go." He did just that; throughout his life that has been his rule.

His busiest years were those between 1933 and 1940, when he was in charge of the USPHS Office of Industrial Hygiene and Sanitation. Toward the end of that period he and his work began to attract public attention. In *Reader's*

Digest for February, 1939, there was a 400-word encomium under the title "Unsung Heroes of Public Service — II." The author, Albert W. Atwood, described him as "key man" in the rapidly growing movement to prevent and cure occupational diseases, the leader in discovering ways to deal with the hazards of jobs, the most influential in getting preventive measures adopted. Through his efforts industrial hygiene bureaus had been set up in many states and cities; he maintained close contact with local health officers, industries, and labor organizations.

It was noted that Doctor Sayers then headed some 90 research workers in the newly completed laboratory of the National Institute of Health at Bethesda, Maryland.

In January, 1941, after he had been appointed Director of the Bureau of Mines, *The Explosives Engineer* said of him: "Industry today recognizes employee health and safety as important in operation. And few have contributed more to industry's conception of this welfare job than the new Director of the Bureau of Mines who has been an apostle of this humanitarian cause for most of his adult life. His steadfast belief that every occupational disease hazard can be controlled is no longer a crusader's slogan. It is a reality backed by facts and statistics . . . Doctor Sayer's intensive application to work has given him little time for recreation, and virtually none for vacation. In the performance of his duties he has visited 47 states, and many foreign countries. . . . His publications have been of great importance to public health and industry because they have dealt with realistic problems of carbon monoxide, silicosis, high temperatures and humidities, health and safety in mines, toxic dusts and gases, and most other phases of industrial health."

Later in 1941 came the Knudsen Award. Leroy U. Gardner had preceded him as its recipient, and William Sawyer, Harold Vonachen, and Tony Lanza followed him. Here the "many contributions" mentioned in his citation took note of his team spirit; during the 1930's he and Gardner and Lanza were a persuasive triumvirate in widespread educational activities among medical and technical societies and legislative groups.

Those recognitions, of course, were pleasing. But it is believed that they meant more to Doctor Sayers as evidences of the success of his work than as personal tributes. His work has been his life — vocation, avocation, vacation. That is true even now. In addition to his duties in the Baltimore City Health Department he has several steady commitments as Consultant. Almost as busy as ever, he continues to give; and the rich storehouse of wisdom and energy and experience he draws upon seems as inexhaustible as the Biblical vessel of oil that did not fail, or the storied purse that always held a coin.

Many in industrial medicine and hygiene have come to know this slender, brown-eyed, pleasant and gracious gentleman. It is their loss who have not been so fortunate. His are the natural simplicity, earnestness and charm that mark the aristocracy of temperament. He is tactful, thinks graciously, is unassuming. Ask him about himself and he'll talk about his work. His looks and manner suggest the scholar; it is to his co-workers that the force and fire of his total dedication have been revealed. Close to the incisive processes of his brilliant mind, they often must have thought him indeed a man with a mission. And to the numerous insurance and industrial corporations that have tried with no success to hire him away, he must have seemed a veritable knight errant on a lifetime quest.

Regularly he attends the annual Industrial Health Conferences. As the industrial physicians, hygienists, nurses, dentists bring their offerings of new and added information, he undoubtedly finds considerable satisfaction in observing the scientific dominance of industrial hygiene — that synthesis of sciences for which, so many years ago, he set the early pattern.

Now 74, Royd Sayers has spent 43 years in what has been, under his direction, almost the U. S. *Worker* Health Service. The fullness of those years is only outlined here. Their complete story will never be written; it would have to be the tremendous epic of the incalculable number of occupational disease cases that were prevented from occurring. Who could write that? But — by those who understand — it can be read. For it lives in the Book of Destiny, where all things great and good have permanent recording.

—A.D.C.

Polio Vaccine Denied

Should the company vaccinate for polio? "No," Bell Telephone Co. of Canada tells employees. Despite a polio epidemic in the area, Canadian Bell's Medical Director reports the incidence of polio among the company's employees is "too low to be considered an industrial health problem." Community facilities are available for vaccination, he adds. "Employees should protect themselves against polio."

—*Industrial Relations News*, September 19, 1959.

Conference News

THE INDUSTRIAL HYGIENE FOUNDATION 24th ANNUAL MEETING

Mellon Institute, Pittsburgh

One year ago at this time there was uncertainty whether the Industrial Hygiene Foundation had completed the mission for which it was organized 24 years ago, and speculation was that it should be dissolved.

Now that perplexity has been resolved, largely through the energetic activities of WILLIAM P. YANT, D.Sc., as Chairman of the Board of Trustees and H. H. SCHRENK, Ph.D., the Managing Director of the Industrial Hygiene Foundation. Their activities, together with those of the entire Board of Trustees and the entire staff of the foundation, led to an outstanding annual scientific meeting October 28 and 29, 1959, in Pittsburgh. This annual meeting, as customary, was characterized by a series of conferences; notably the management conference, the medical conference, the joint engineering-legal conference and the chemical-toxicological conference.

In the medical conference one major topic of discussion was a new theory of the causation of the pneumoconioses. Silicosis and some other pneumoconioses now are believed to represent immunological diseases, but full necessary proof is lacking. Equally engaging was the appraisal of the need for the utilization of epidemiological methods in industrial medicine and industrial hygiene.

One discussion centered about the desirability of more concern in the workman's abilities to work rather than his disabilities.

Still another period was devoted to the difficulties of the manner of impairment rating in contrast to disability evaluation; the former being a distinct medical function and the latter being more identifiable with legal interpretation.

This entire annual meeting was marked by many new developments in occupational health. Readily it became apparent that in occupational health nothing reaches finality and at every turn new requirements appear. Such disclosures determined beyond debate that the Industrial Hygiene Foundation had not completed its opportunities to be of service to industry and that every good reason exists for continuation of this outstanding organization that year by year for 24 years has demonstrafed its usefulness to the industries of the country.

Abstracts

"Observations of the Cardiovascular System in Experimental Traumatic Shock"

by H. M. WISE JR., et al. in *Surgery* 46:543-556, 1959

There are two phases in the response of animals to traumatic shock; the initiating factors, represented by hemorrhage and the stress of massive sudden tissue destruction, and the sustaining factors which consist of continued loss of blood into the area of injured tissues and concomitant development of pathogenic clostridial infection. The sustaining factors reinforce the initiating factors and are injurious to the circulation. The survival time of animals can be varied considerably by the use of appropriate antibiotics or by the transfusion of large amounts of blood.

Standard experimental wounds were carried out on goats divided into eight control, eight injured but untreated and eight injured, penicillin treated animals. The untreated group had a mean survival time of 19.7 hours as compared to 29.7 hours for the treated group. The general response was quite similar; that is, an incompletely compensated respiratory alkalosis associated with hyperventilation, an immediate fall in O_2 consumption, cardiac output, mean arterial pressure and stroke volume. The pulse and mean peripheral resistance became elevated immediately. However, the untreated animals maintained an elevated resistance, while in the longer-lived penicillin group the resistance gradually decreased. At 90% of the survival time the latter group had a resistance equivalent to the preinjury value. After the initial fall in cardiac output, the output remains steady but at a low level in both groups. Therefore it is felt that whatever myocardial damage occurs owing to blood loss, tissue trauma and infection, death was not caused by the single factor of myocardial failure.—W. A. WICHOWSKI, M.D.

"Thoracic Duct Ligation"

by I. HATIBOGLU and G. E. MOORE in *Surgery*, 46:521-528, 1959

The thoracic duct drains the lymphatics of the parietal peritoneum, the visceral peritoneum and most of the abdominal viscera. The parasternal trunks, one on each side of the midline along the internal mammary vessels, drains both the peritoneal and pleural surface of the

diaphragm. After duct ligation, lymph from the gastrointestinal system, *instead* of draining through the thoracic duct, takes a new route through the diaphragmatic and lower anterior chest lymphatics to the larger parasternal lymphatic channels.

Thirty-five rabbits were innoculated with V2 rabbit carcinoma. Twenty of these had their ducts ligated, the remaining 15 were nonligated controls.

The major difference was the finding of lymph node metastases in the superior parasternal region of the ligated animals only. Gross lung metastases were found in six of each group, and were accompanied by liver metastases in four ligated and five nonligated animals, showing that ligation of the lower part of the thoracic duct does not prevent the lymphatic spread of tumor cells to the lungs. The spread in the abdominal lymph nodes had no characteristic pattern in either group, however, while gross metastases involved the bowel wall and mesenteric lymph nodes in both groups, they were more localized in the nonligated group, indicating that dissemination in the gastrointestinal tract is more extensive in ligated animals. Also metastatic involvement of muscles of the chest wall, the abdominal wall and the diaphragm was more frequent in the ligated animals.

—W. A. WICHOWSKI, M.D.

Books

Rehabilitation

Ed. *Hermann Munk* (Darmstadt, Germany: Dr. Dietrich Steinkopff Verlag, 1959)

Rehabilitation of disabled persons is a laudable endeavor in whatever country it may be conducted. In six countries at least the term rehabilitation is a part of the language and in this book the word is German, the language of the publication.

In October, 1958, a conference was held in Nurenberg on the various phases of rehabilitation. It was considered so successful that the papers were published as Supplement No. 5 of the periodical *Arbeitsmedizen und Arbeitsschutz* and it was urged that industrial medical groups in other countries present similar conferences.

The opening paper of the 13 included in this 152 page supplement is the most informative description of rehabilitation in the U.S.A. that has come to the reviewer's attention. The paper also includes activities in this field in England. In a comprehensive discussion on rehabilitation in Germany, it is noted that the pioneer work in this field was started over 50 years ago in that country and that its development has been along somewhat different avenues than those followed in the Anglo-Saxon countries of England and the U.S.A.

Included in this supplement are papers on the principal phases of rehabilitation, covering such areas as experiences in occupational therapy of arrested tuberculosis patients, orthopedic treatment and prosthetic devices for arm disabilities, the psychiatric approach to rehabilitation and neurological-psychiatric problems of brain damaged workers. The health maintenance program conducted by a large Essen coal mining concern is also presented.

The four supplements preceding this one on rehabilitation, published from 1955 to 1957, cover the subjects of health and fire protection in intaglio printing, tendon sheath diseases, occupational medicine in Europe including silicosis problems and special occupational pathologies and health conservation in industry.

—WARREN A. COOK

Ultrasonic Fact Book

(Metuchen, N. J.: Gulton Industries, Inc., 1958)

An old saw asks the question, "How do you know your dog whistle is working when you cannot hear a sound?" The answer appears to be, "If your wayward dog comes running home every time, it must be working." That first dog whistle of 1883 must have been a female. It has littered with such fecundity that one of its offspring now is knocking at every factory, physician's office and household kitchen offering to perform tasks now impossible or to do them quicker and cheaper. Most doors will be opened joyously since ultrasonics involve sound without noise.

Among a hundred other jobs in the doctor's office, this handyman will clean out blood clogged hypodermic needles; in the home will wash the dishes; in the factory will bore neat holes through ceramics or coat fine dust particles with an even covering; in the public domain promises to dispel fogs and mitigate some air pollution. Withal, it retains its original application of getting the erring dog set on pursuing dog business, back to the family fireside and without disturbing the neighbors.

Unabashedly this brochure is a manufacturer's appeal to the public and in particular the scientific world to learn more about the work capacities of ultrasonics. The virtue of this small publication is that in a few pages, along with actual photographs, more understandable and engaging drama has been assembled than found in any six learned texts.

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December, 1959

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Reading Lists in Occupational Health

The request that most often reaches this journal and training centers for education in occupational health is for suitable lists of books in the field. The fact that numerous physicians seek certification by the American Board of Preventive Medicine has led to an increase in the number of these requests. From time to time such lists have been published. Once more an extensive listing is presented. Of the older books the items included represent standard publication. Of the newer book publications nearly all general items are presented together with a few monographs on single topics.

Since candidates for specialty certification will be examined in over-all preventive medicine, a number of items are introduced pertinent to that requirement. At all times current developments and activities appear only in periodicals. That leads to a listing of the outstanding journal publications concerned with industrial medicine, industrial toxicology and industrial hygiene. None of these several lists is complete.

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A. M. A. Archives of Industrial Health, 535 N. Dearborn Street, Chicago 10, Illinois.

Journal of Occupational Medicine, 28 East Jackson Blvd., Chicago 11, Illinois.

National Safety News, National Safety Council, 425 N. Michigan Ave., Chicago 11, Illinois.

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The Transactions of the Association of Industrial Medical Officers, Tavistock Square, London W.C.1, England.

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The Big Five

If only a few books are to become available the following five are regarded as outstanding:

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Clinical reports on Dartal: 1. Edisen, C. B., and Samuels, A. S.: A.M.A. Arch. Neurol. & Psychiat. *80*:481 (Oct.) 1958. 2. Ferrand, P. T.: Minnesota Med. *41*:853 (Dec.) 1958. 3. Mathews, F. P.: Am. J. Psychiat. *114*:1034 (May) 1958.

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References: 1. Brownlee, George: *A Comparison of the Antipyretic Activity and Toxicity of Phenacetin and Aspirin*, Quarterly J. of Pharmacy and Pharmacology, 10:609-620. 2. Goodman, Louis S. and Gilman, Alfred: *The Pharmacological Basis of Therapeutics*, sec. ed. 1955. 3. Hammes, E. M., Jr.: *Pain-Relieving Drugs*, J. Lancet 79:67, Feb. 1952.

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Medical Director: Nationally-known specialist w/impressive record of achievement; 10 yrs, executive Vice-Pres, deputy director & National Med Dir, very important Natl Council and Med Assn; Diplomate, Preventive Med & Public Hlth; can recommend without any reservation.

Medical Director: 2 yrs, Indus Phys, leading co; 4 yrs, Director, State Hlth Dept, Indus Hygiene, since 1955, Director, Med Dept & Safety; wishes to make best use of his high interest and superior bckgrnd, Indus Med; Cert'd Occupational Med; trng, isotopes & radiological defense; late 30's.

Assistant Medical Director: 36; MD, Univ of Ill, CM; sevl yrs, flight surg; 10 yrs, priv pract plus indus clinical med & adm; sevl smaller plants; prefers fulltime indus post; immed available; DNB.

Generalist: 28, strong interest, career indus med; MD, Boston Univ Schl of Med; 2 yrs, med ofc, USN; presently Sr Med ofc, USN ord dept; mil serv completed; any locality; DNB; immed available.

Industrial Hygienist: MD, Ann Arbor; MPH, Johns Hopkins; sevl yrs, priv pract; 10 yrs Public Hlth surveyor, rsrch assoc; past yr, priv consultant basis in which field he has no further interest; prefers NY State; consider others; lic, Mich, Fla, Calif; DNB; Immediately available.

Staff Physician: Interested indus position leading to Med Directorship; 10 yrs, private, general practice including 7 yrs as medical examiner, large electric mfgr co; capable genl & ortho surg; anyy locality; early 40's.

Staff Physician: Working toward Cert'n, Occupational Med; MIH, Harvard Schl of Publ Hlth; 18 mos, Int Med res wk; seeks Indus permanent position, full-time; NE or MW.

Staff Physician: 2 yrs, Director, Blood & Plasma center; three and one-half yrs, private, genl pract; 3 yrs, Med Ofc, USAF; seeks Indus Med in SE, SW or California.

Staff Physician: 2 yrs, med ofc, USAF; 1 yr, priv pract; 2 yrs, Asst Phy, important foundation hsp; 1½ yrs, genl clinic pract; seeks indus med post in Fla, Ala or Ga only; age 37.

Foreign Appointment Desired: Woman doctor with MPH degree seeks post as consultant in Med care or Director of Prof Servs or Assoc Prof, Med care; specal interest, geriatrics & chronic diseases; excl med education & top-level exper; past 5 yrs, Asst Prof, Admin Med (tchg & rsrch); Bd elig, Preventive Medicine.

Surgeon: 3 yrs, surg residency; 2 yrs, chief surg, USAF; 1½ yrs, phy & surg, US Army hosp; presently Med Dir, div of lge corp; seeks assn w/clinic or surg limiting practice to Indus Surg; prefers So, SE, SW; Age 34.

COMMENT AND OPINION

Mental Health Program

More than 2,000 supervisors have participated in International Business Machine Corp.'s Managers Mental Health Orientation Program since its launching in August, 1958. It is designed to make supervisors more sensitive to signs of emotional disturbances in employees, and instill in them an awareness of the importance of emotional first aid on the job. Through discussions, films and case studies, managers are taught to observe changes in employees' behavior indicative of emotional reaction to stresses and strains. "The program doesn't try to make our managers into amateur psychiatrists," says Alan A. McLean, M.D., IBM Psychiatric Consultant. But, it teaches them how to recognize disturbances and refer disturbed workers to plant physicians for appropriate treatment.

Mental health training is given on company time as part of IBM's management training program. General staff, division and project managers, and first line supervisors attend a single three-hour session. The typical course covers: IBM's mental health program — The orientation sessions are only one aspect of IBM's four-part mental health program, which includes research, consultation, education, and community work. Mental health and the manager — Danger signs of mental illness and the human-relations aspects of referring workers for psychiatric help are discussed. Facilities available to the manager — These include counseling and the services of plant physicians and psychiatric consultants. Mental health and industry — Noting that emotional disorders cause more absenteeism than the common cold, IBM points out to workers that mental health has a direct application to efficient management. The company explains that spotting an employee with emotional problems, and making the appropriate medical referral, can prevent more serious emotional disturbance and anticipate resulting personnel and morale problems.

It's too early to estimate results of the year-old orientation program, Dr. McLean says. However, because of the awareness generated by the program, there has been an increase in the number of referrals to the plant physicians. Nearly all of the referrals by managers, he adds, have been justified.

—Industrial Relations News, October 24, 1959.

Absenteeism Blamed on Emotions

The major cause of absenteeism in industry, after the common cold, is "emotional problems," the Medical Director of the *New York Times* told the 10th annual conference of the Massachusetts Industrial Nurses Association recently.

The "depersonalization" of many modern businesses, because of increased size and automation, calls for additional skill in counseling techniques on the part of industrial nurses, Dr. David H. Goldstein said.

The accident rate in industry has been reduced 60% in the last 30 years, he said, but today accident-prone workers are probably responsible for more mishaps than the machines they work with.

Radioactivity Safeguards

The Minnesota State Board of Health warned users to tighten up their control procedures for handling dangerous radioactive materials. The board's action followed an accident at Coon Rapids in which a truck carrying radioactive materials used in testing pipelines and wells hit another piece of machinery. The truck tipped and the material came out of the container.

Dr. Warren Lawson, chief of the board's section on radiation and occupational health, said the board learned the well-testing firm had notified neither the board nor the atomic energy commission in Washington that it was using radioactive substances. He said the board investigated and learned there were some safety hazards in the firm's methods of handling the substance, "not only to the public but especially to the employees." He said the board threatened the firm with court action unless it complied with

board regulations for handling radioactive materials. A subsequent check showed the firm had made the required changes, he said.

Dr. Lawson said the board will be glad to help any person or firm using radioactive materials or devices in establishing proper safety controls.

Heart Surveys

Industry is teaming up with medicine for new large scale, on-the-spot studies of men at work a leading Chicago industrialist said recently. A. Pope Lancaster, vice president of the Western Electric company, told the Seventh Heart-in-Industry Conference in the Hotel Sherman of a five year study being conducted among 2,000 workers at his company's Chicago plant. The goal is to learn more about the factors associated with heart disease in middle aged men, its chief victims. The study is being conducted by the University of Illinois Department of Medicine under the direction of Dr. Oglesby Paul.

Executive Heart

The top flight executive is no more prone to heart attacks than his lowliest employee. What counts is heredity plus physical makeup, says Dr. Irvine H. Page of Cleveland, a former president of the American Heart Association.

Science is now able to spot, years in advance, likely candidates for heart attacks during middle age, Dr. Page said. They are short, stocky men, somewhat overweight, with a blood pressure higher than normal, whose forebears suffered from heart and artery disease.

The factor of stress and tension may have something to do with it, Dr. Page said, adding: "More important than stress itself, is the way he reacts to it."

CO Danger

With the advent of cool weather, health officers warn about carbon monoxide poisoning. "Your cabin, house trailer, or even your automobile can become your private gas chamber if you aren't careful," warns Dr. Albert E. Heustis, Michigan State Health Commissioner. He points out that at least six Michigan persons died from carbon monoxide in cabins last year, and three died recently in a small house trailer of a type commonly used by hunters.

Carbon monoxide is a stealthy killer formed whenever carbon materials aren't burned properly. Although colorless and odorless, it's highly lethal.

Dr. Richard S. Ryan, acting City Health Officer, advises hunters — and all persons who might be staying in trailers, cottages, cabins, or motels — to make sure that burners, air intakes, and vent pipes on space heaters and similar devices are adjusted properly.

Motorists are advised to keep a window of their cars at least part way open.

The State Health Department's division of occupational health reported that a dangerous situation existed because of the number of trailers with defective heat-

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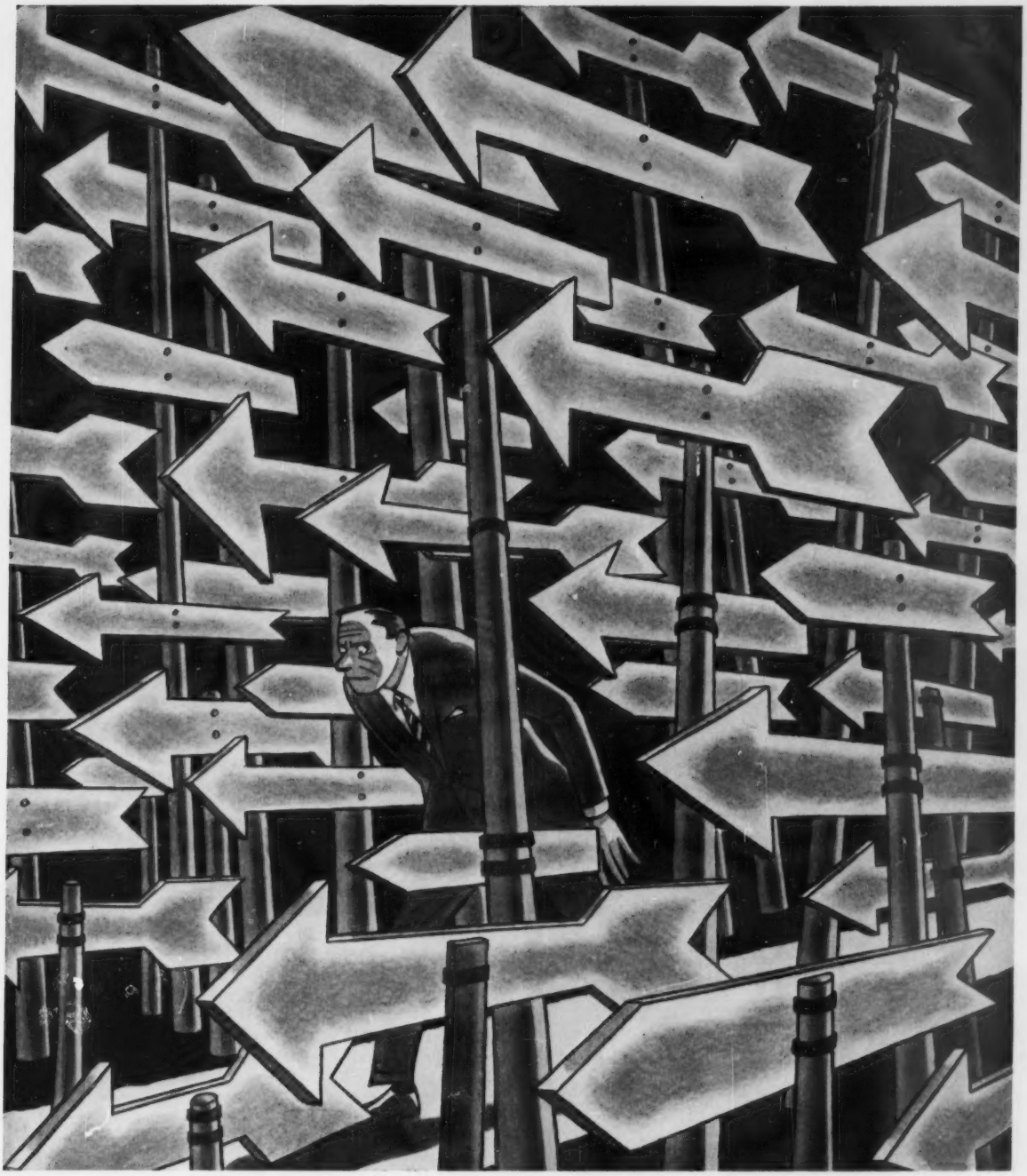

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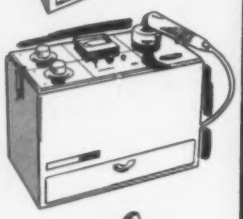

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ing equipment. The division is contacting trailer manufacturers, dealers and heater manufacturers to correct potentially dangerous equipment.

Russell G. Scovill, district engineer for the State Health Department division of occupational health, is checking trailer manufacturers and dealers in the Saginaw area to be sure defective heating equipment is not installed.

Recognizing that each winter brings its list of carbon monoxide victims despite warnings, the City Health Department is attacking the problem in another quarter also.

Department nurses are distributing pamphlets to anyone who uses space-heating equipment. These pamphlets explain proper venting procedures.

Dr. Ryan warns that water heaters are potentially as deadly as space heaters and require checking, too.

—Dick Rappley in *Saginaw* (Mich.) *News*, October 11, 1959.

Is There a Doctor on the Slope?

There will be, at the VIII Olympic Winter Games at Squaw Valley, California next February. A squad of 10 skiing physicians will be only a minute's schuss from any competitor injured on the slopes of Squaw Valley during the Games, February 18 to 28, 1960.

This is only one facet of a sweeping medical and health services plan devised for the Games by the Medical Division of the Olympic Organizing Committee under the direction of William W. Stiles, M.D., a University of California Professor of Public Health.

The Medical Division of the Olympic Organizing Committee is intended "to render emergency medical care to everybody in Squaw Valley who needs it" during the month of February, 1960, as well as to prevent sickness by making sure that the Olympic Area meets the highest standards of sanitation in its food service, water supply, housing and sewage disposal.

It was determined that the program would require a hospital, a pharmacy, first aid stations and physiotherapy rooms as well as sleds and ambulances. To operate the facilities there would have to be a staff of doctors, nurses and public health and administrative personnel. And thousands of dollars worth of medical supplies would be needed.

Dr. Stiles was working within a $25,000 budget for supplying the food and lodging needs of his personnel during February, 1960.

Within less than a year, arrangements have been made for these facilities for the Medical Division:

A 28-bed emergency hospital that will be licensed by (and therefore meet the standards of) the State Bureau of Hospitals; five medical aid stations in Squaw Valley; four more medical aid stations outside the Valley at points where personnel will be housed; a pharmacy; a central supply station; three training or physiotherapy rooms; a mobile and evacuation section with a fleet of six four-wheel drive military ambulances, two over-snow vehicles, eight station wagons as well as sleds for transporting patients over snow; offices for administrative and public health personnel.

Most of the hospital facilities will be located in a one-story permanent building near the athletes' dormitories. Although the hospital's operating room will be equipped for performing major surgery, it

is expected that most surgical cases would go to Tahoe Forest Hospital at nearby Truckee or to one of the Reno hospitals 40 miles away.

Hospital beds will be in two quonset huts behind the hospital and connected with it by a sheltered walkway. The quonsets will be fully equipped with heat, insulation, bathrooms, toilets. Food will be supplied from the athletes' dining room 100 feet away where chefs will be preparing for a wide variety of palates and diets of many countries.

Some 20 skiing doctors will be available during the Games and during the training period that begins in early February. Of these, 10 will patrol the slopes regularly during the Games period. They will travel with ski patrolmen who are versed in first aid.

When an athlete is injured, medical aid is always close by. National Ski Patrolmen will note the accident almost immediately. Many of the patrolmen will carry pack radios. Emergency telephones are placed along the courses. A skiing doctor therefore can be immediately summoned to any point.

If the competitor is lying in the path of a race course, he is immediately removed by men trained in moving injured persons. If an ambulance cannot reach the scene, an Akia rescue sled (an aluminum shell-type sled developed in Australia) is called to transport the athlete. The victim will go to the nearest medical aid station, or the field hospital.

Arrangements for emergency helicopter service have been made with Stead Air Force Base at Reno in the event that a competitor or spectator must be airlifted to a hospital. The Air Force is also prepared to air-drop medical supplies if snow storms should prevent immediate delivery by land.

A small fortune would have been needed to outfit the Medical Division's vast facilities. But equipment was borrowed from the Department of Defense, and many other supplies and items of equipment were loaned or donated by private firms. Some pharmaceutical supply houses are loaning medical supplies with the agreement that unused items may be returned and that the Olympic Organizing Committee need pay only for those that are used.

For preventive medicine, the Medical Division's Public Health Section has a staff of four people headed by Dr. Richard White of Auburn, California, health officer of Placer County. It will be responsible for the sanitary condition of the water supply (the Olympic Area's water supply is under strictest regulation and the water has been certified to be of excellent quality regularly since the distribution system was built in 1959), milk, food preparation and service, sewage disposal, housing, vermin control, and communicable disease control. It is also overseeing the responsibility for lost persons and general safety.

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THERAPISTS here is your best friend for treatment of fractures, spastic cases, cerebral palsy, stroke, polio or, hand injuries. Get it at your surgical dealer or as a "trial order" send $2.00 for one $2.85 jar.

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For subaqua therapy. Stainless steel tank with electric turbine ejector and thermostatic mixing valve.

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THERAPY UNIT

Delivers temperature-controlled moist heat safely and effectively. Complete with stainless steel treatment hood, table, latex foam table pad, nylon moistureproof curtains and 4-quart filling can.

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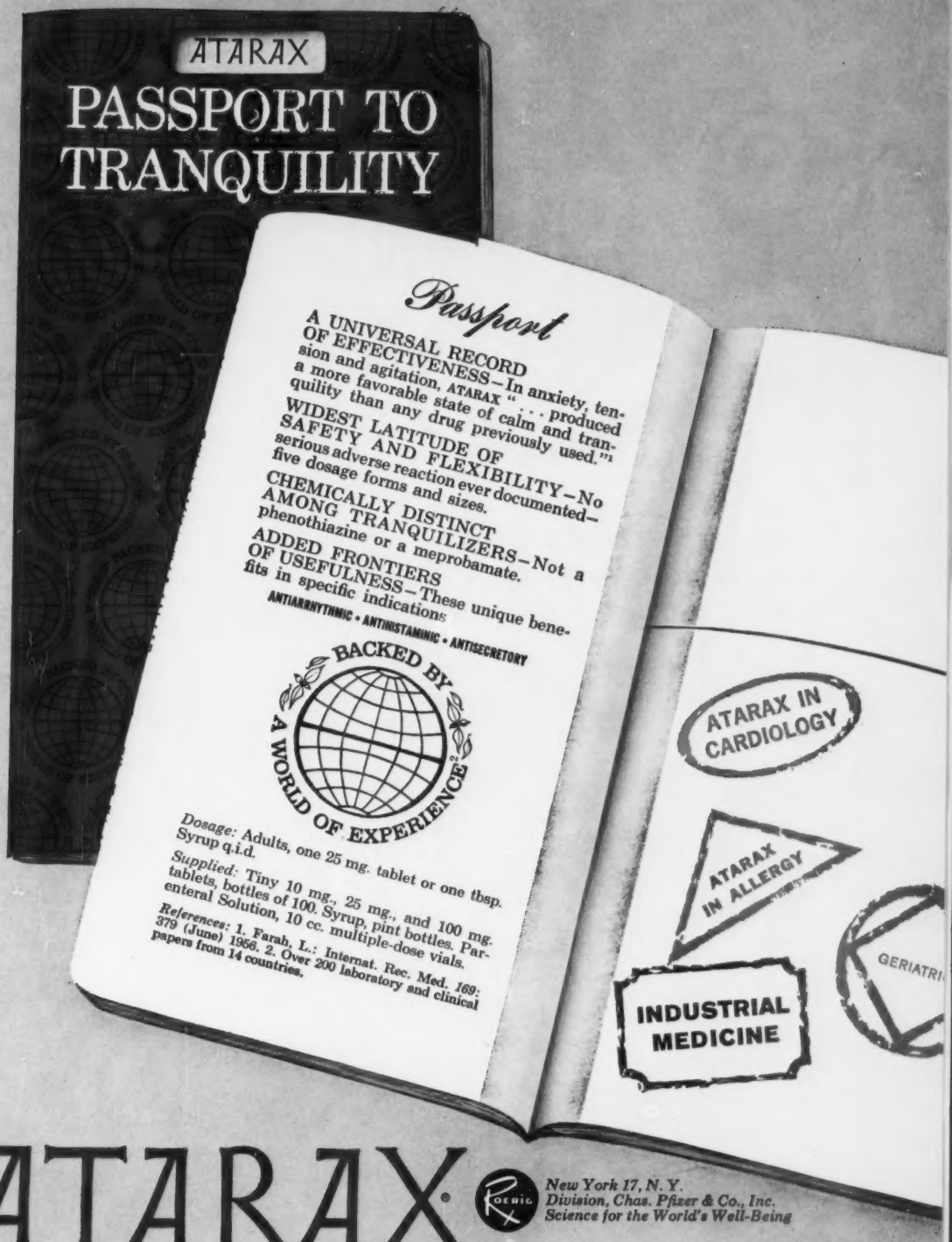
Reach Road, Williamsport, Pa.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PASSPORT TO TRANQUILITY
Passport
A UNIVERSAL RECORD OF EFFECTIVENESS—In anxiety, tension and agitation, ATARAX "... produced a more favorable state of calm and tranquility than any drug previously used."1
WIDEST LATITUDE OF SAFETY AND FLEXIBILITY—No serious adverse reaction ever documented—five dosage forms and sizes.
CHEMICALLY DISTINCT AMONG TRANQUILIZERS—Not a phenothiazine or a meprobamate.
ADDED FRONTIERS OF USEFULNESS—These unique benefits in specific indications
ANTIARRHYTHMIC • ANTIHISTAMINIC • ANTISECRETORY
BACKED BY A WORLD OF EXPERIENCE
Dosage: Adults, one 25 mg. tablet or one tbsp. Syrup q.i.d.
Supplied: Tiny 10 mg., 25 mg., and 100 mg. tablets, bottles of 100. Syrup, pint bottles. Parenteral Solution, 10 cc. multiple-dose vials.
References: 1. Farah, L.: Internat. Rec. Med. 169: 379 (June) 1956. 2. Over 200 laboratory and clinical papers from 14 countries.
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INDUSTRIAL MEDICINE
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SURVEY DISCLOSES INDUSTRY'S NO. 3 SKIN HYGIENE PROBLEM: WASTE SOAP

Here's The Answer To It From SBS

The most difficult three industrial skin hygiene problems, as rated by 2,177 major plants recently surveyed, are:

1. *SKIN DISEASE*
2. *REMOVAL OF TOUGH SOILS*
3. *WASTE OF SOAPS*

Closely associated with the actual problem of skin disease is the costly waste of soaps in *all* plant areas. Liquid soaps run off hands too easily, other types melt or spill. Where wasted soap accumulates, extra housekeeping expenses are involved, sub-sanitary conditions exist and worker dissatisfaction mounts. Often the combined cost of soap waste and resulting maintenance can add up to more than the original cost of the soap supply. Small wonder industry rates it as such a problem!

What's the answer to it? Ask an SBS representative to show you "Operation Pinpoint", 10 minute sound slide digest of the national survey, and you'll see how a *planned corrective program* can solve all these skin hygiene problems. Since SBS produces a *complete range of cleansers*, he can suggest the right cleanser for each job. For the safest, savingest answer to skin disease, tough soils, and soap waste, write today . . . Dept. 7L.

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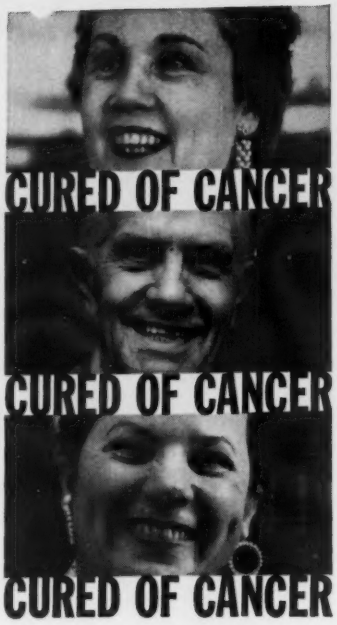


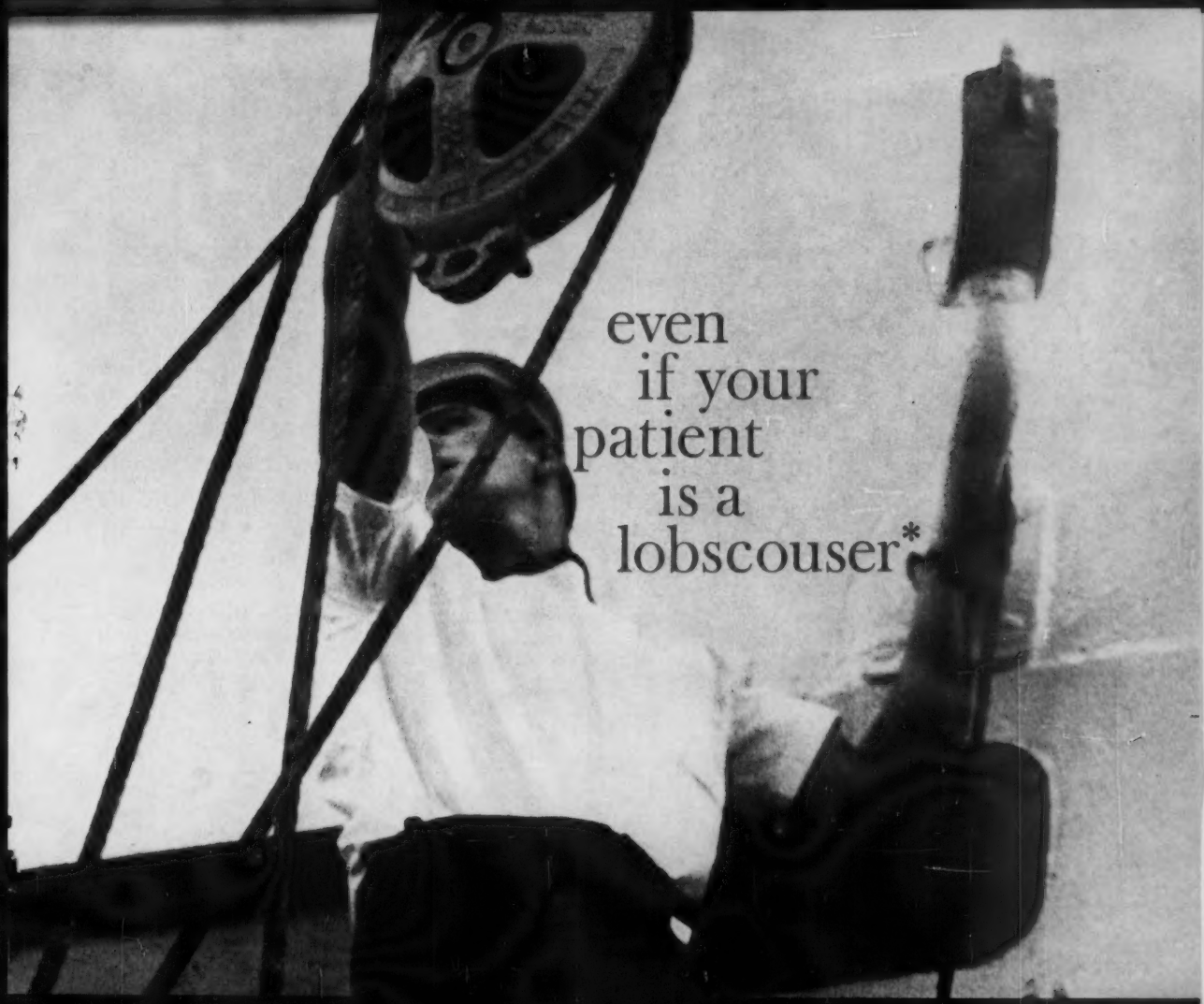
There are a million of them! Untold numbers of these men and women actually owe their lives to information they obtained from the American Cancer Society.

Fighting cancer is our business. We have all kinds of ammunition: posters; exhibits; film strips; easy-to-understand folders; hard-hitting, dramatic films.

They're free for use in your office, your club, at your PTA meeting, your church socials, your community center. They're all designed to alert you, your family and your friends to facts about cancer which can mean the difference between life and death.

Call or write the Unit of the American Cancer Society nearest you. It's stocked with ammunition that could save *your* life.

AMERICAN CANCER SOCIETY



he'll be under way again soon, once he's on

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(PARAFLEX® + TYLENOL®)

for muscle relaxation plus analgesia

prescribe PARAFON in low back pain—sprains—strains—rheumatic pains

Each PARAFON tablet contains:

PARAFLEX® Chlorzoxazone† . . . . . 125 mg.
Specific for skeletal muscle spasm

TYLENOL® Acetaminophen . . . . . 300 mg.
The analgesic preferred in musculoskeletal pain

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and in arthritis

PARAFON®

with Prednisolone

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new modern site-of-pain relief in musculoskeletal distress

GER-O-FOAM

(aerosol foam)

eases pain, spasm; improves function

Deeply absorbed to permeate affected sensory endings, the proven local analgesic-anesthetic agents in GER-O-FOAM give relief in minutes, lasting for hours in . . . rheumatoid arthritis, osteoarthritis, muscle sprain, fibromyositis, low back pain, etc.

IN A NEW CLINICAL STUDY[1] GER-O-FOAM gave "satisfactory" results in 85% of chronic musculoskeletal patients. Response was "striking" in certain intractable acute conditions . . ."permitting functional exercises otherwise impossible."

GER-O-FOAM combines: Methyl salicylate 30%, benzocaine 1%, traces of volatile oils in a specially processed, neutralized emulsion base, for aerosol use.

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GERIATRIC PHARMACEUTICAL CORPORATION Bellerose New York

1. Gordon, E. E. and Haas, A.: Industrial Medicine & Surgery 28:217, 1959.

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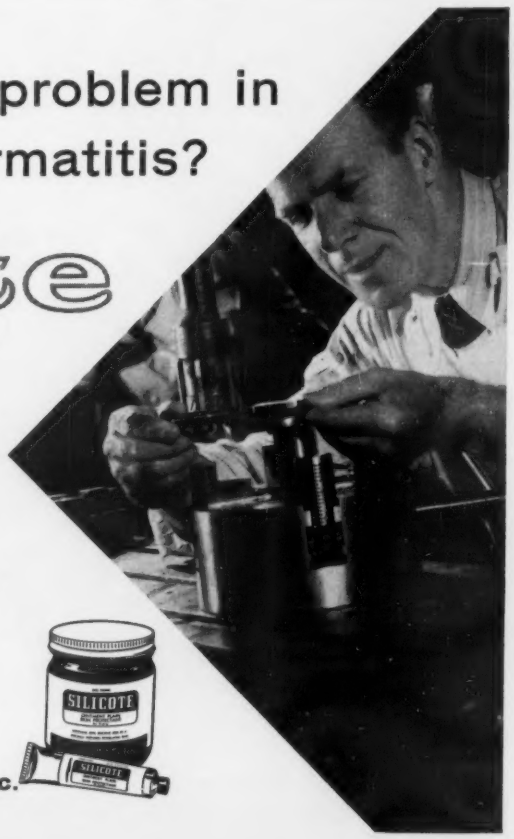
do you have a problem in industrial dermatitis?

Silicote

SILICONE SKIN PROTECTANT



Silicote provides an effective barrier against a wide range of skin irritants. It adheres to the skin, is not easily removed, and, when properly applied, can not be seen nor felt on the skin, permitting workers performing delicate tasks to stay on the job.

PROTECTS AGAINST

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IN TREATMENT

of contact dermatoses, Silicote clears up many cases not responsive to other therapy.

Silicote is the only preparation containing 30% silicones (dimethicone) in specially prepared petrolatum base. Silicote is non-occlusive.

May we work with you in your particular problem? Send for clinical supply.

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in bronchial asthma

PREDNAMIN™ tablets

"potentiated prednisone"

breaks the "side-effects barrier" to full, long-range corticosteroid benefits

PREDNAMIN brought excellent or good relief to 76% of 50 asthmatic patients . . . all of whom had responded unsatisfactorily to one or more years of specific therapy and to epinephrine, ephedrine and aminophylline. Although treatment was prolonged and continuous, only 2 patients required withdrawal of PREDNAMIN because of side effects.*

The optimally balanced PREDNAMIN combination magnifies the efficacy of small doses of prednisone . . . but leaves corticosteroid hazards at a low-dose minimum. With PREDNAMIN, problem asthmatics and patients with atopic and contact dermatoses need no longer be deprived of continuing and often dramatic corticosteroid benefits.

Each PREDNAMIN Tablet contains prednisone 2.5 mg., chlorprophenpyridamine maleate 2.0 mg., and ascorbic acid 250.0 mg. Bottles of 30 and 100.

*Swartz, H.: To be published.

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Krantz, J. C., Jr.: The restless patient—A psychologic and pharmacologic viewpoint. Current M. Digest 25:68, Feb. 1958.

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